Galaxy
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FREDERIK POHL

Jack Sharkey • Jim Harmon • Willy Ley

THE DRAGON MASTERS
Complete Short Science-Fiction Novel by JACK VANCE

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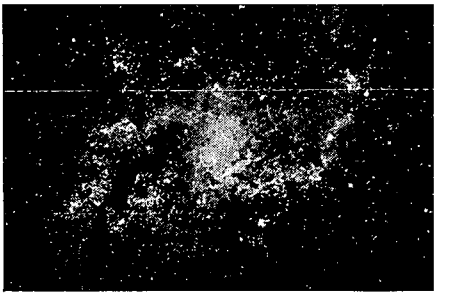

M-33 in Triangulum. Is this a younger galaxy than our own? It has many bright, blue-white stars —too hot to live long, and thus recently formed. The spiral shape seems just to be taking form.

ROBERT M. GUINN
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WHICH WAY IS PROGRESS?

MOST of the great debates of our time contain built-in hypotheses which seldom get questioned — because most people engaging in the debates don't know they are there. One common one has to do with "progress." We assume that "progress" is another word for "change" — that is, willy-nilly, the human race is on its way up, and everything that is different is better.

There isn't any doubt that there has been progress in the history of mankind. We are a long way from the Sumerians, in so many things that it is almost impossible to count them. Everyone would agree to that.

But what are we all agreeing to? What, specifically, are the things that have shown improvement?

As a starter, let's say the prolongation of the average life span. Certainly we have done a great deal there. Probably it has been tripled in historic time, and if you define progress in terms of longevity we are home free before the argument really gets started. But — "progress" implies a goal. What's the goal here, immortality? Obviously there is no great merit in *that* if it is unaccompanied by other far-reaching changes. Never mind how much *you* would like to live forever; do you want the human race to stop evolving because there is no room for new generations? Or — the only alternative in the long run — do you want the population so to increase that we all starve? (Or to succumb to population-pressure psychoses, as

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recent animal experiments suggest may happen?)

"Progress" in this case, then, indicates a change in a direction which ultimately changes its sign and becomes "regression." Since we can't locate the point at which the change occurs, let's see if we can find an easier measure of our accomplishments.

Shall we speak of progress in providing material comforts for the average man? That's an easy concession too . . . provided we know what we mean by "material comforts." The early cultures did not give every man a TV set, that's sure; they didn't have them to give. Nor did they provide automobiles, for the same reason. But let's not pretend that all of the gadgets and contraptions we carry on our fiscal backs are pure joy! The average man's budget of major machines and appliances totals maybe fifty items, from hi-fi sets to typewriters, and of the fifty perhaps ten are in some way or another broken and another two or three never worked exactly right even when he got them from the store. As all suburbanites know, there is no "convenience" quite so inconvenient as a fully automated household when a storm or other difficulty cuts off the power supply.

We might, if we wished, measure "progress" in terms of diet or food production or energy consumption. Here we find surprises. The world average diet, except for the rich nations, is hardly one calorie higher per capita than it was five thousand years ago; that is to say, it is at the minimum level that will make survival and reproduction possible. The production of food *per acre* of land has shown improvement where fertilizers and irrigation have been applied — that's a plus — but has actually shown decrease where agricultural machinery has taken over hand-tilling of the soil. That's a minus, and a big one. It is true that we now produce more food per man-hour expended in farming; but man-hours are always available, we create more of them every time a child is born; and the arable land of the Earth is a remorselessly fixed quantity.

Energy consumption, then? The world average is about 2500 kilowatt hours per year. This is far greater than during the Middle Ages, say. But it is far *less* than that of interglacial man, 50,000 years ago, who burned up twice that much each year! (Wastefully, it is true. Most of it was in the form of great watchfires to keep animals away. But wastefulness is not a sin peculiar to primitive man, as we drivers of automobiles which convert something under 5% of the original heat energy of the petroleum

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into mechanical motion should admit.)

Indeed, we can hardly rely even on the arrow of evolution to point always "up." We pride ourselves on our great brains, our delicately featured faces and other marks that distinguish us from the apes — but Boskop man had a larger brain and a far more "human" face; and the last Boskopoid died a hundred centuries ago.

HAVING said this much, we must not pretend to have said the final word. There *has* been progress, and we all know it.

But let's be sure we know what "progress" we mean — and, more important, let's think about what we want "progress" in the future to be like. Without such thought humanity becomes a race of fanatics. (Under the definition of "fanatic" that goes: "One who redoubles his efforts once he has lost sight of his goal.")

George Orwell made a penetrating and relevant observation in his book, *The Road to Wigan Pier*. The time was the 1930s; he had been traveling in the ugly industrial towns of northern England, visiting working-class homes where a dozen families might use the same communal outside lavatory; where eight persons slept in one room, five in a bed; where every green thing had been systematically rooted out and it was impossible to heat the tiny houses to a point where sickness could be avoided.

Orwell questioned one of the men whose families lived in these "beastly" homes:

> I asked him when the housing shortage first became acute in his district; he answered, "When we were told about it," meaning that till recently people's standards were so low that they took almost any degree of overcrowding for granted.

"When we were told about it." Man can reconcile himself to almost anything. He will seek a better life if he can — but only if he can see the direction in which improvement lies.

It is in helping us to find these directions that science-fiction stories may serve a useful purpose. We need to look somewhat farther ahead than our grandfathers did. The pace of events is very quick now.

If we want "progress" to lead us in a direction we will like, we need to know what the possible directions are.

For that we need a perspective, an opportunity to look at ourselves from outside . . .

And for that we need science-fiction stories! — **THE EDITOR**

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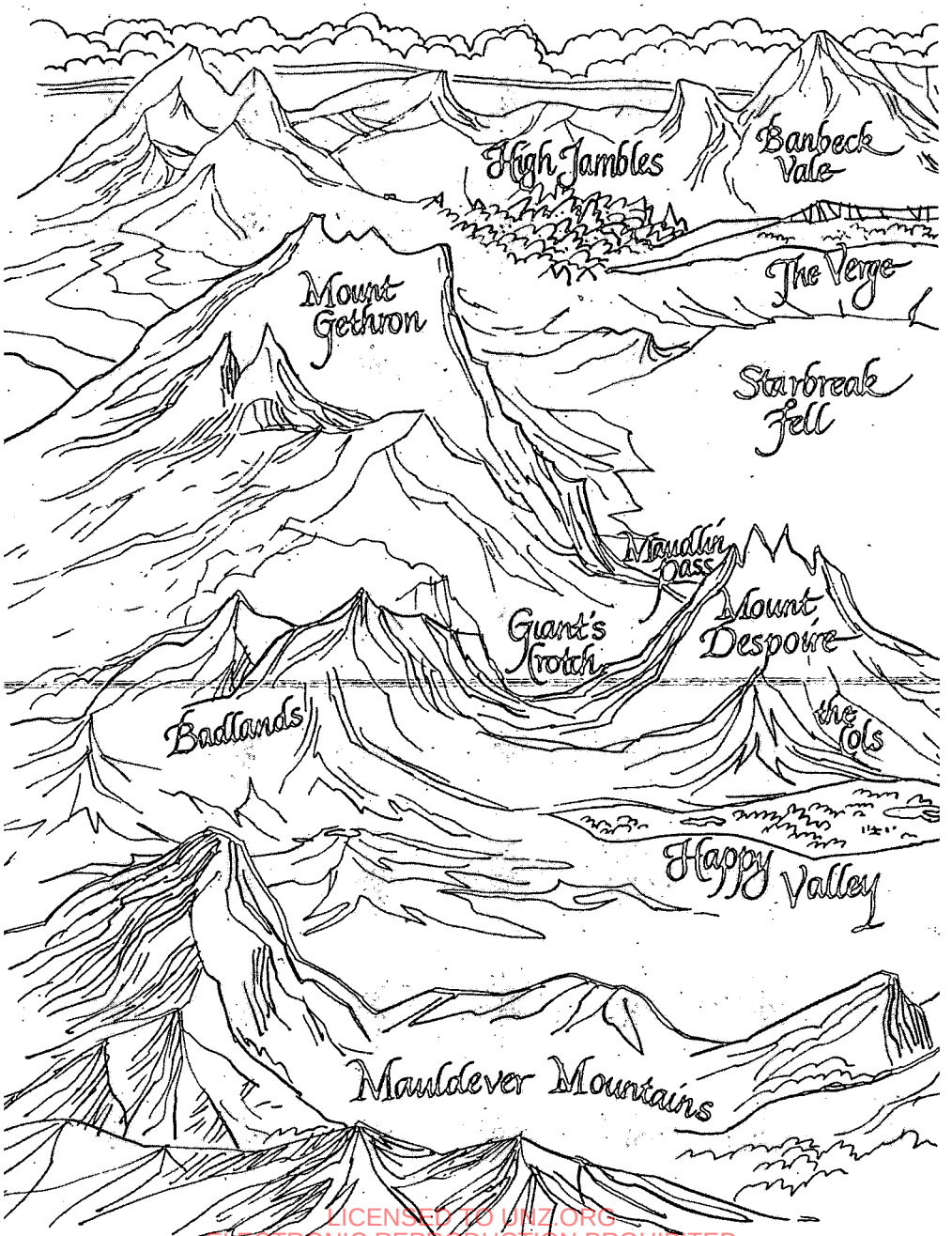

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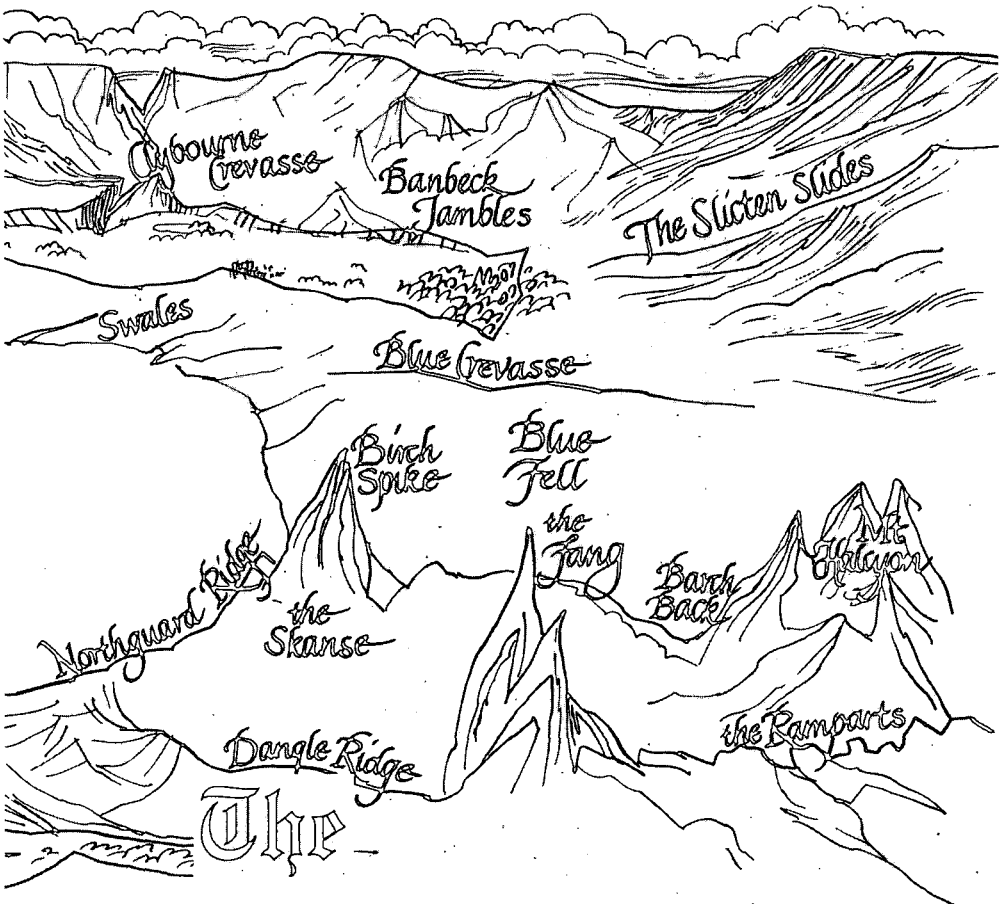

The Dragon Masters

The race of Man was growing old. But it was not ready to die — not while it had foes to kill first!

By JACK VANCE Illustrated By GAUGHAN

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I

THE apartments of Joaz Banbeck, carved deep from the heart of a limestone crag, consisted of five principal chambers, on five different levels. At the top were the reliquarium and a formal council chamber: the first a room of somber magnificence housing the various archives, trophies and mementos of the Banbecks; the second a long narrow hall, with dark wainscoting chest-high and a white plaster vault above, extending the entire width of the crag, so that balconies overlooked Banbeck Vale at one end and Kergan's Way at the other.

Below were Joaz Banbeck's private quarters: a parlor and bed-chamber, then next his study and finally, at the bottom, a work-room where Joaz permitted none but himself.

Entry to the apartments was through the study, a large L-shaped room with an elaborate groined ceiling, from which depended four garnet-encrusted chandeliers. These were now dark. Into the room came only a watery gray light from four honed-glass plates on which, in the manner of a *camera obscura*, were focused views across Banbeck Vale. The walls were paneled with lignified reed. A rug patterned in angles, squares and circles of maroon, brown and black covered the floor.

In the middle of the study stood a naked man.

His only covering was the long, fine, brown hair which flowed down his back, the golden torc which clasped his neck. His features were sharp and angular, his body thin. He appeared to be listening, or perhaps meditating. Occasionally he glanced at a yellow marble globe on a nearby shelf, whereupon his lips would move, as if he were committing to memory some phrase or sequence of ideas.

At the far end of the study a heavy door eased open.

A flower-faced young woman peered through, her expression mischievous, arch. At the sight of the naked man, she clapped her hands to her mouth, stifling a gasp. The naked man turned — but the heavy door had already swung shut.

For a moment he stood deep in frowning reflection, then slowly went to the wall on the inside leg of the L. He swung out a section of the bookcase and passed through the opening. Behind him the bookcase thudded shut. Descending a spiral staircase he came out into a chamber rough-hewn from the rock: Joaz Banbeck's private work-room. A bench supported tools, metal

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shapes and fragments, a bank of electromotive cells, oddments of circuitry: the current objects of Joaz Banbeck's curiosity.

The naked man glanced at the bench. He picked up one of the devices and inspected it with something like condescension, though his gaze was as clear and wondering as that of a child.

Muffled voices from the study penetrated to the work-room. The naked man raised his head to listen, then stooped under the bench. He lifted a block of stone, slipped through the gap into a dark void. Replacing the stone, he took up a luminous wand, and set off down a narrow tunnel, which presently dipped to join a natural cavern. At irregular intervals luminous tubes exuded a wan light, barely enough to pierce the murk.

The naked man jogged forward swiftly, the silken hair flowing like a nimbus behind him.

BACK in the study the minstrel-maiden Phade and an elderly seneschal were at odds. "Indeed I saw him!" Phade insisted. "With these two eyes of mine, one of the sacerdotes, standing thus and so, as I have described." She tugged angrily at his elbow. "Do you think me bereft of my wits, or hysterical?"

Rife the seneschal shrugged, committing himself neither one way nor the other. "I do not see him now." He climbed the staircase, peered into the sleeping parlor. "Empty. The doors above are bolted." He peered owlishly at Phade. "And I sat at my post in the entry."

"You sat sleeping. Even when I came past you snored!"

"You are mistaken; I did but cough."

"With your eyes closed, your head lolling back?"

Rife shrugged once more. "Asleep or awake, it is all the same. Admitting that the creature gained access, how did he leave? I was wakeful after you summoned me, as you must agree."

"Then remain on guard, while I find Joaz Banbeck." Phade ran down the passage which presently joined Bird Walk, so called for the series of fabulous birds of lapis, gold, cinnabar, malachite and marcasite inlaid into the marble. Through an arcade of green and gray jade in spiral columns she passed out into Kergan's Way, a natural defile which formed the main thoroughfare of Banbeck Village. Reaching the portal, she summoned a pair of lads from the fields. "Run to the brooder, find Joaz Banbeck! Hasten, bring him here; I must speak with him."

The boys ran off toward a low cylinder of black brick a mile to the north.

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Phade waited. With the sun Skene at its nooning, the air was warm. The fields of vetch, bellegarde and spharganum gave off a pleasant odor. Phade went to lean against a fence. Now she began to wonder about the urgency of her news, even its basic reality. "No!" she told herself fiercely. "I saw! I saw!"

At either side tall white cliffs rose to Banbeck Verge, with mountains and crags beyond, and, spanning all, the dark sky flecked with feathers of cirrus. Skene glittered dazzling bright, a minuscule flake of brilliance.

Phade sighed, half-convinced of her own mistake. Once more, less vehemently, she reassured herself. Never before had she seen a sacerdote; why should she imagine one now?

The boys, reaching the brooder, had disappeared into the dust of the exercise pens. Scales gleamed and winked; grooms, dragon-masters, armorers in black leather moved about their work.

After a moment Joaz Banbeck came into view.

HE mounted a tall thin-legged Spider, urged it to the full extent of its head-jerking lope, pounded down the track toward Banbeck Village. Phade's uncertainty grew. Might Joaz become exasperated, would he dismiss her news with an unbelieving stare? Uneasily she watched his approach. Coming to Banbeck Vale only a month before, she still felt unsure of her status. Her preceptors had trained her diligently in the barren little valley to the south where she had been born, but the disparity between teaching and practical reality at times bewildered her. She had learned that all men obeyed a small and identical group of behaviors. Joaz Banbeck, however, observed no such limits, and Phade found him completely unpredictable. She knew him to be a relatively young man, though his appearance provided no guide to his age. He had a pale austere face in which gray eyes shone like crystals, a long thin mouth which suggested flexibility, yet never curved far from a straight line. He moved languidly; his voice carried no vehemence; he made no pretense of skill with either saber or pistol; he seemed deliberately to shun any gesture which might win the admiration or affection of his subjects. Yet he had both.

Phade originally had thought him cold, but presently changed her mind. He was, so she decided, a man bored and lonely, with a quiet humor which at times seemed rather grim. But he treated her without discourtesy, and Phade, testing him with all her hundred and one coquetries,

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not infrequently thought to detect a spark of response.

Joaz Banbeck dismounted from the Spider, ordered it back to its quarters. Phade came diffidently forward, and Joaz turned her a quizzical look. "What requires so urgent a summons? Have you remembered the nineteenth location?"

Phade flushed in confusion. Artlessly she had described the painstaking rigors of her training; Joaz now referred to an item in one of the classifications which had slipped her mind.

Phade spoke rapidly, excited once more. "I opened the door into your study, softly, gently. And what did I see? A sacerdote, naked in his hair! He did not hear me. I shut the door, I ran to fetch Rife. When we returned — the chamber was empty!"

Joaz's eyebrows contracted a trifle; he looked up the valley. "Odd." After a moment he asked, "You are sure that he saw nothing of you?"

"No. I think not. Yet, when I returned with stupid old Rife he had disappeared! Is it true that they know magic?"

"As to that, I cannot say," replied Joaz.

THEY returned up Kergan's Way, traversed tunnels and rock-walled corridors, finally came to the entry chamber.

Rife once more dozed at his desk. Joaz signaled Phade back and, going quietly forward, thrust aside the door to his study. He glanced here and there, nostrils twitching.

The room was empty.

He climbed the stairs, investigated the sleeping-parlor, returned to the study. Unless magic were indeed involved, the sacerdote had provided himself a secret entrance. With this thought in mind, he swung back the bookcase door, descended to the workshop and again tested the air for the sour-sweet odor of the sacerdotes. A trace? Possibly.

Joaz examined the room inch by inch, peering from every angle. At last, along the wall below the bench, he discovered a barely perceptible crack, marking out an oblong.

Joaz nodded with dour satisfaction. He rose to his feet and returned to his study. He considered his shelves: what was here to interest a sacerdote? Books, folios, pamphlets? Had they even mastered the art of reading? When next I meet a sacerdote I must inquire, thought Joaz vaguely; at least he will tell me the truth. On second thought, he knew the question to be ludicrous; the sacerdotes, for all their nakedness, were by no means barbarians, and in fact had provided him his four vision-panes — a

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technical engineering feat of no small skill.

He inspected the yellowed marble globe which he considered his most valued possession: a representation of mythical Eden. Apparently it had not been disturbed. Another shelf displayed models of the Banbeck dragons: the rust-red Termagant; the Long-horned Murderer and its cousin the Striding Murderer; the Blue Horror; the Fiend, low to the ground, immensely strong, tail tipped with a steel barbell; the ponderous Jugger, skullcap polished and white as an egg. A little apart stood the progenitor of the entire group: a pearl-pallid creature upright on two legs, with two versatile central members, a pair of multi-articulated brachs at the neck.

Beautifully detailed though these models might be, why should they pique the curiosity of a sacerdote? No reason whatever, when most of the originals could be studied daily without hindrance.

What of the workshop, then? Joaz rubbed his long pale chin. He had no illusions about the value of his work. It was idle tinkering and no more. Joaz put aside conjecture. Most likely the sacerdote had come upon no specific mission, the visit perhaps being part of a continued inspection. But why?

A pounding at the door: old Rife's irreverent fist. Joaz opened to him.

"Joaz Banbeck, a notice from Ervis Carcolo of Happy Valley. He wishes to confer with you, and at this moment awaits your response on Banbeck Verge."

"Very well," said Joaz. "I will confer with Ervis Carcolo."

"Here? Or on Banbeck Verge?"

"On the Verge, in half an hour."

II

TEN miles from Banbeck-Vale, across a wind-scoured wilderness of ridges, crags, spines of stone, amazing crevasses, barren fells and fields of tumbled boulders, lay Happy Valley. As wide as Banbeck Vale but only half as long and half as deep, its bed of wind-deposited soil was only half as thick and correspondingly less productive.

The Chief Councillor of Happy Valley was Ervis Carcolo, a thick-bodied short legged man with a vehement face, a heavy mouth, a disposition by turns jocose and wrathful. Unlike Joaz Banbeck, Carcolo enjoyed nothing more than his visits to the dragon barracks, where he treated dragon-masters, grooms and dragons alike to a spate of bawled invective.

Ervis Carcolo was an energetic man, intent upon restoring Hap-

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py Valley to the ascendancy it had enjoyed some twelve generations before. During those harsh times, before the advent of the dragons, men fought their own battles. The men of Happy Valley had been notably daring, deft and ruthless. Banbeck Vale, the Great Northern Rift, Clewhaven, Sadro Valley, Phosphor Gulch: all acknowledged the authority of the Carcolos.

Then down from space came a ship of the Basics, or grephs, as they were known at that time. The ship killed or took prisoner the entire population of Clewhaven. It attempted as much in the Great Northern Rift, but only partially succeeded; then bombarded the remaining settlements with explosive pellets.

When the survivors crept back to their devastated valleys, the dominance of Happy Valley was a fiction. A generation later, during the Age of Wet Iron, even the fiction collapsed. In a climactic battle Goss Carcolo was captured by Kergan Banbeck and forced to emasculate himself with his own knife.

Five years of peace elapsed, and then the Basics returned. After depopulating Sadro Valley, the great black ship landed in Banbeck Vale, but the inhabitants had taken warning and had fled into the mountains. Toward nightfall twenty-three of the Basics sallied forth behind their precisely trained warriors: several platoons of Heavy Troops, a squad of Weaponeers — these hardly distinguishable from the men of Aerlith — and a squad of Trackers: these emphatically different. The sunset storm broke over the Vale, rendering the flyers from the ship useless, which allowed Kergan Banbeck to perform the amazing feat which made his name a legend on Aerlith. Rather than joining the terrified flight of his people to the High Jambles, he assembled sixty warriors and shamed them to courage with jeers and taunts.

It was a suicidal venture — fitting the circumstances.

Leaping from ambush they hacked to pieces one platoon of the Heavy Troops, routed the others, and captured the twenty-three Basics almost before they realized that anything was amiss. The Weaponeers stood back, frantic with frustration, unable to use their weapons for fear of destroying their masters. The Heavy Troopers blundered forward to attack, halting only when Kergen Banbeck performed an unmistakable pantomime to make it clear that the Basics would be the first to die.

Confused, the Heavy Troopers drew back. Kergan Banbeck, his men and the twenty-three captives escaped into the darkness.

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THE long Aerlith night passed. The dawn storm swept out of the east, thundered overhead, retreated majestically into the west; Skene rose like a blazing atom.

Three men emerged from the Basic ship: a Weaponeer and a pair of Trackers. They climbed the cliffs to Banbeck Verge, while above flitted a small Basic flyer, no more than a buoyant platform, diving and veering in the wind like a poorly balanced kite. The three men trudged south toward the High Jambles, a region of chaotic shadows and lights, splintered rock and fallen crags, boulders heaped on boulders. It was the traditional refuge of hunted men.

Halting in front of the Jambles, the Weaponeer called out for Kergan Banbeck, asking him to parley.

Kergan Banbeck came forth. There ensued the strangest colloquy in the history of Aerlith. The Weaponeer spoke the language of men with difficulty, his lips, tongue and glottal passages more adapted to the language of the Basics.

"You are restraining twenty-three of our Revered. It is necessary that you usher them forth, in all humility." He spoke soberly, with an air of gentle melancholy, neither asserting, commanding nor urging. As his linguistic habits had been shaped to Basic patterns, so had his mental processes.

Kergan Banbeck, a tall spare man with varnished black eyebrows, black hair shaped and varnished into a crest of five tall spikes, gave a bark of humorless laughter. "What of the Aerlith folk killed, what of the folk seized aboard your ship?"

The Weaponeer bent forward earnestly, himself an impressive man with a noble aquiline head. He was hairless except for small rolls of wispy yellow fleece. His skin shone as if burnished. His

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ears, where he differed most noticeably from the unadapted men of Aerlith, were small, fragile flaps. He wore a simple garment of dark blue and white, carried no weapons save a small multi-purpose ejector. With complete poise and quiet reasonableness he responded to Kergan Banbeck's question: "The Aerlith folk who have been killed are dead. Those aboard the ship will be merged into the under-stratum, where the infusion of fresh blood is of value."

Kergan Banbeck inspected the Weaponeer with contemptuous deliberation. In some respects, thought Kergan Banbeck, this modified and carefully inbred man resembled the sacerdotes of his own planet, notably in the clear fair skin, the strongly modeled features, the long legs and arms.

Perhaps telepathy was at work, or perhaps a trace of the characteristic sour-sweet odor had been carried to him: turning his head he noticed a sacerdote standing among the rocks not fifty feet way — a man naked except for his golden torc and long brown hair blowing behind him like a pennant. By the ancient etiquette, Kergan Banbeck looked through him, pretended that he had no existence. The Weaponeer after a swift glance did likewise.

"I demand that you release the folk of Aerlith from your ship," said Kergan Banbeck in a flat voice.

The Weaponeer smilingly shook his head, bent his best efforts to the task of making himself intelligible. "These persons are not under discussion. Their —" he paused, seeking words — "their destiny is . . . parceled, quantum-type, ordained. Established. Nothing can be said more."

KERGAN Banbeck's smile became a cynical grimace. He stood aloof and silent while the Weaponeer croaked on. The sacerdote came slowly forward, a few steps at a time. "You will understand," said the Weaponeer, "that a pattern for events exists. It is the function of such as myself to shape events so that they will fit the pattern." He bent, with a graceful sweep of arm, and seized a small jagged pebble. "Just as I can grind this bit of rock to fit a round aperture."

Kergan Banbeck reached forward, took the pebble, tossed it high over the tumbled boulders. "That bit of rock you shall never shape to fit a round hole."

The Weaponeer shook his head in mild deprecation. "There is always more rock."

"And there are always more holes," declared Kergan Banbeck.

"To business then," said the

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Weaponeer. "I propose to shape this situation to its correct arrangement."

"What do you offer in exchange for the twenty-three grephs?"

The Weaponeer gave his shoulder an uneasy shake. The ideas of this man were as wild, barbaric and arbitrary as the varnished spikes of his hair-dress. "If you desire I will give you instruction and advice, so that —"

Kergan Banbeck made a sudden sharp gesture. "I make three conditions." The sacerdote now stood only ten feet away, face blind, gaze vague. "First," said Kergan Banbeck, "a guarantee against future attacks upon the men of Aerlith. Five grephs must always remain in our custody as hostages. Second — further to secure the perpetual validity of the guarantee — you must deliver me a space-ship, equipped, energized and armed. And you must instruct me in its use."

The Weaponeer threw back his head and made a series of bleating sounds through his nose.

"Third," continued Kergan Banbeck, "you must release all the men and women presently aboard your ship."

The Weaponeer blinked, spoke rapid hoarse words of amazement to the Trackers. They stirred, uneasy and impatient, watching Kergan Banbeck sidelong as if he were not only savage, but mad. Overhead hovered the flyer; the Weaponeer looked up and seemed to derive encouragement from the sight. Turning back to Kergan Banbeck with a firm fresh attitude, he spoke as if the previous interchange had never occurred. "I have come to instruct you that the twenty-three Revered must be instantly released."

Kergan Banbeck repeated his own demands: "You must furnish me a space-ship, you must raid no more, you must release the captives. Do you agree, yes or no?"

The Weaponeer seemed confused. "This is a peculiar situation — indefinite, unquantizable."

"Can you not understand me?" barked Kergan Banbeck in exasperation. He glanced at the sacerdote, an act of questionable decorum, then performed in manner completely unconventional: "Sacerdote, how can I deal with this blockhead? He does not seem to hear me."

THE sacerdote moved a step nearer, his face as bland and blank as before. Living by a doctrine which proscribed active or intentional interference in the affairs of other men, he could make to any question only a specific and limited answer. "He hears you, but there is no meeting of

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ideas between you. His thought structure is derived from that of his masters. It is incommensurable with yours. As to how you must deal with him, I cannot say."

Kergan Banbeck looked back to the Weaponeer. "Have you heard what I asked of you? Did you understand my conditions for the release of the grephs?"

"I heard you distinctly," replied the Weaponeer. "Your words have no meaning, they are absurdities, paradoxes. Listen to me carefully. It is ordained, complete, a quantum of destiny, that you deliver to us the Revered. It is irregular, it is not ordainment that you should have a ship, or that your other demands be met."

Kergan Banbeck's face became red. He half-turned toward his men but, restraining his anger, spoke slowly and with careful clarity. "I have something you want. You have something I want. Let us trade."

For twenty seconds the two men stared eye to eye. Then the Weaponeer drew a deep breath. "I will explain in your words, so that you will comprehend. Certainties — no, not certainties: definites . . . Definites exist. These are units of certainty, quanta of necessity and order. Existence is the steady succession of these units, one after the other. The activity of the universe can be expressed by reference to these units. Irregularity, absurdity — these are like — half of a man, with half of a brain, half of a heart, half of all his vital organs. Neither are allowed to exist. That you hold twenty-three Revered as captives is such an absurdity: an outrage to the rational flow of the universe."

Kergan Banbeck threw up his hands, turned once more to the sacerdote. "How can I halt his nonsense? How can I make him see reason?"

The sacerdote reflected. "He speaks not nonsense, but rather a language you fail to understand. You can make him understand your language by erasing all knowledge and training from his mind, and replacing it with patterns of your own."

Kergan Banbeck fought back an unsettling sense of frustration and unreality. In order to elicit exact answers from a sacerdote, an exact question was required; indeed it was remarkable that this sacerdote stayed to be questioned. Thinking carefuly, he asked, "How do you suggest that I deal with this man?"

"Release the twenty-three grephs." The sacerdote touched the twin knobs at the front of his golden torc: a ritual gesture indicating that, no matter how reluctantly, he had performed an act which conceivably might alter the course of the future. Again

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he tapped his torc and intoned, "Release the grephs; he will then depart."

Kergan Banbeck cried out in unrestrained anger. "Who then do you serve? Man or greph? Let us have the truth! Speak!"

"By my faith, by my creed, by the truth of my *tand,* I serve no one but myself." The sacerdote turned his face toward the great crag of Mount Gethron and moved slowly off. The wind blew his long fine hair to the side.

KERGAN Banbeck watched him go, then with cold decisiveness turned back to the Weaponeer. "Your discussion of certainties and absurdities is interesting. I feel that you have confused the two. Here is certainty from my viewpoint: I will not release the twenty-three grephs unless you meet my terms. If you attack us further, I will cut them in half, to illustrate and realize your figure of speech, and perhaps convince you that absurdities are possible. I say no more."

The Weaponeer shook his head slowly, pityingly. "Listen, I will explain. Certain conditions are unthinkable. They are unquantized, un-destined —"

"Go," thundered Kergan Banbeck. "Otherwise you will join your twenty-three revered grephs, and I will teach you how real the unthinkable can become!"

The Weaponeer and the two Trackers, croaking and muttering, turned, retreated from the Jambles to Banbeck Verge, descended into the valley. Over them the flyer fluttered like a falling leaf.

Watching from their retreat among the crags, the men of Banbeck Vale presently witnessed a remarkable scene. Half an hour after the Weaponeer had returned to the ship, he came leaping forth once again: dancing, cavorting. Others followed him — Weaponeers, Trackers, Heavy Troopers and eight more grephs — all jerking, jumping, running back and forth in distracted steps. The ports of the ship flashed lights of various colors, and there came a slow rising sound of tortured machinery.

"They have gone mad!" muttered Kergan Banbeck. He hesitated an instant, then gave an order. "Assemble every man! We attack while they are helpless!"

Down from the High Jambles rushed the men of Banbeck Vale. As they descended the cliffs, a few of the captured men and women from Sadro Valley came timidly forth from the ship, and meeting no restraint fled to freedom across Banbeck Vale. Others followed — and now the Banbeck warriors reached the valley floor.

Beside the ship the insanity

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had quieted. The out-worlders huddled quietly beside the hull. There came a sudden mind-shattering explosion: a blankness of yellow and white fire. The ship disintegrated. A great crater marred the valley floor; fragments of metal began to fall among the attacking Banbeck warriors.

Kergan Banbeck stared at the scene of destruction.

Slowly, his shoulders sagging, he summoned his people and led them back to their ruined valley. At the rear, marching single-file, tied together with ropes, came the twenty-three grephs, dull eyed, pliant, already remote from their previous existence.

The texture of Destiny was inevitable. The present circumstances could not apply to twenty-three of the Revered. The mechanism must therefore adjust to insure the halcyon progression of events. The twenty-three, hence, were something other than the Revered: a different order of creature entirely.

If this were true, what were they? Asking each other the question in sad, croaking undertones, they marched down the cliff into Banbeck Vale.

III

ACROSS the long Aerlith years the fortunes of Happy Valley and Banbeck Vale fluctuated with the capabilities of the opposing Carcolos and Banbecks. Golden Banbeck, Joaz's grandfather, was forced to release Happy Valley from clientship when Uttern Carcolo, an accomplished dragon-breeder, produced the first Fiends. Golden Banbeck, in his turn, developed the Juggers, but allowed an uneasy truce to continue.

Further years passed. Ilden Banbeck, the son of Golden, a frail ineffectual man, was killed in a fall from a mutinous Spider. With Joaz yet an ailing child, Grode Carcolo decided to try his chances against Banbeck Vale. He failed to reckon with old Handel Banbeck, grand-uncle to Joaz and Chief Dragon-master.

The Happy Valley forces were routed on Starbreak Fell. Grode Carcolo was killed and young Ervis gored by a Murderer. For various reasons, including Hendel's age and Joaz's youth, the Banbeck army failed to press to a decisive advantage. Ervis Carcolo, though exhausted by loss of blood and pain, withdrew in some degree of order, and for further years a suspicious truce held between the neighboring valleys.

Joaz matured into a saturnine young man who, if he excited no enthusiastic affection from his people, at least aroused no violent dislike. He and Ervis Carcolo were united in a mutual con-

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tempt. At the mention of Joaz's study, with its books, scrolls, models and plans, its complicated viewing-system across Banbeck Vale (the optics furnished, it was rumored, by the sacerdotes), Carcolo would throw up his hands in disgust. "Learning? Pah! What avails all this rolling in bygone vomit? Where does it lead? He should have been born a sacerdote. He is the same sort of sour-mouthed cloud-minded weakling!"

An itinerant named Dae Alvonso, who combined the trades of minstrel, child-buyer, psychiatrist and chiropractor, reported Carcolo's obloquies to Joaz, who shrugged. "Ervis Carcolo should breed himself to one of his own Juggers," said Joaz. "He would thereby produce an impregnable creature with the Jugger's armor and his own unflinching stupidity."

The remark in due course returned to Ervis Carcolo, and by coincidence touched him in a particularly sore spot. Secretly he had been attempting an innovation at his brooders: a dragon almost as massive as the Jugger, with the savage intelligence and agility of the Blue Horror. But Ervis Carcolo worked with an intuitive and over-optimistic approach, ignoring the advice of Bast Givven, his Chief Dragonmaster.

The eggs hatched; a dozen spratlings survived. Ervis Carcolo nurtured them with alternate doses of tenderness and objurgation. Eventually the dragons matured.

Carcolo's hoped-for combination of fury and impregnability was realized in four sluggish, irritable creatures, with bloated torsos, spindly legs, insatiable appetites. ("As if one can breed a dragon by commanding it: 'Exist!' " sneered Bast Givven to his helpers, and advised them: "Be wary of the beasts; they are com-

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petent only at luring you within reach of their brachs.")

THE time, effort, facilities and provender wasted upon the useless hybrid had weakened Carcolo's army. Of the fecund Termagants he had no lack. There was a sufficiency of Long-horned Murderers and Striding Murderers; but the heavier and more specialized types, especially Juggers, were far from adequate to his plans.

The memory of Happy Valley's ancient glory haunted his dreams. First he would subdue Banbeck Vale; and often he planned the ceremony whereby he would reduce Joaz Banbeck to the office of apprentice barracks-boy.

Ervis Carcolo's ambitions were complicated by a set of basic difficulties. Happy Valley's population had doubled but, rather than extending the city by breaching new pinnacles or driving tunnels, Carcolo constructed three new dragon brooders, a dozen barracks and an enormous training compound. The folk of the valley could choose either to cram the fetid existing tunnels or build ramshackle dwellings along the base of the cliff. Brooders, barracks, training compound and huts encroached on Happy Valley's already inadequate fields. Water was diverted from the pond to maintain the brooders. Enormous quantities of produce went to feed dragons. The folk of Happy Valley, under-nourished, sickly, miserable, shared none of Carcolo's aspirations, and their lack of enthusiasm infuriated him.

In any event, when the itinerant Dae Alvonso repeated Joaz Banbeck's recommendation that Ervis Carcolo breed himself to a Jugger, Carcolo seethed with choler. "Bah! What does Joaz Banbeck know about dragon-breeding? I doubt if he understands his own dragon-talk." He referred to the means by which orders and instructions were transmitted to the dragons: a secret jargon distinctive to every army. To learn an opponent's dragon-talk was the prime goal of every Dragon-master, for he thereby gained a degree of control over his enemies' forces. "I am a practical man, worth two of him," Carcolo went on. "Can he design, nurture, rear and teach dragons? Can he impose discipline, teach ferocity? No. He leaves all this to his Dragon-masters, while he lolls on a couch eating sweetmeats, campaigning only against the patience of his minstrel-maidens. They say that by astrological divination he predicts the return of the Basics, that he walks with his neck cocked, watching the sky. Is such a man deserving of power and a pros-

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perous life? I say no! Is Ervis Carcolo of Happy Valley such a man? I say yes, and this I will demonstrate!"

DAE Alvonso judiciously held up his hand. "Not so fast. He is more alert than you think. His dragons are in prime condition; he visits them often. And as for the Basics —"

"Do not speak to me of Basics," stormed Carcolo. "I am no child to be frightened by bugbears!"

Again Dae Alvonso held up his hand. "Listen. I am serious, and you can profit by my news. Joaz Banbeck took me into his private study — "

"The famous study, indeed!"

"From a cabinet he brought out a ball of crystal mounted on a black box."

"Aha!" jeered Carcolo. "A crystal ball!"

Dae Alvonso went on placidly, ignoring the interruption. "I examined this globe, and indeed it seemed to hold all of space. Within it floated stars and planets, all the bodies of the cluster. 'Look well,' said Joaz Banbeck, 'you will never see the like of this anywhere. It was built by the olden men and brought to Aerlith when our people first arrived.'

" 'Indeed,' I said. 'And what is this object?'

" 'It is a celestial armamentarium,' said Joaz. 'It depicts all the nearby stars, and their positions at any time I choose to specify. Now —' here he pointed — 'see this white dot? This is our sun. See this red star? In the old almanacs it is named Coralyne. It swings near us at irregular intervals, for such is the flow of stars in this cluster. These intervals have always coincided with the attacks of the Basics.' Here I expressed astonishment; Joaz assured me regarding the matter. 'The history of men on Aerlith records six attacks by the Basics, or grephs as they were originally known. Apparently as Coralyne swings through space the Basics scour nearby worlds for hidden dens of humanity. The last of these was long ago during the time of Kergan Banbeck, with the results you know about. At that time Coralyne passed close in the heavens. For the first time since then, Coralyne is once more close at hand.' This," Alvonso told Carcolo, "is what Joaz Banbeck told me, and this is what I saw."

Carcolo was impressed in spite of himself. "Do you mean to tell me," demanded Carcolo, "that within this globe swim all the stars of space?"

"As to that, I cannot vouch," replied Dae Alvonso. "The globe is set in a black box, and I suspect that an inner mechanism projects images or perhaps luminous spots

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which simulate the stars. Either way it is a marvelous device, one which I would be proud to own. I offered Joaz several precious objects in exchange. But he would have none of them."

Carcolo curled his lip in disgust. "You and your stolen children. Have you no shame?"

"No more than my customers," said Dae Alvonso stoutly. "As I recall, I have dealt profitably with you on several occasions."

Ervis Carcolo turned away, pretended to watch a pair of Termagants exercising with wooden scimitars. The two men stood by a stone fence, behind which scores of dragons practiced evolutions, dueled with spears and swords, strengthened their muscles. Scales flashed. Dust rose up under splayed stamping feet. The acrid odor of dragon-sweat permeated the air.

Carcolo muttered. "He is crafty, that Joaz. He knew you would report to me in detail."

DAE Alvonso nodded. "Precisely. His words were—but perhaps I should be discreet." He glanced slyly toward Carcolo from under shaggy white eyebrows.

"Speak," said Ervis Carcolo gruffly.

"Very well. Mind you, I quote Joaz Banbeck. 'Tell blundering old Carcolo that he is in great danger. If the Basics return to Aerlith, as well they may, Happy Valley is absolutely vulnerable and will be ruined. Where can his people hide? They will be herded into the black ship and transported to a cold new planet. If Carcolo is not completely heartless he will drive new tunnels, prepare hidden avenues. Otherwise —' "

"Otherwise what?" demanded Carcolo.

"Otherwise there will be no more Happy Valley, and no more Ervis Carcolo.' "

"Bah," said Carcolo in a subdued voice.' "The young jackanapes barks in shrill tones."

"Perhaps he extends an honest warning. His further words — but I fear to offend Your Dignity."

"Continue! Speak!"

"These are his words — but no. I dare not repeat them. Essentially he considers your efforts to create an army ludicrous. He contrasts your intelligence unfavorably to his own. He predicts —"

"Enough!" roared Ervis Carcolo, waving his fists. "He is a subtle adversary, but why do you lend yourself to his tricks?"

Dae Alvonso shook his frosty old head. "I merely repeat, with reluctance, that which you demand to hear. Now then, since you have wrung me dry, do me some profit. Will you buy drugs, elixirs, wambles or potions? I

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have here a salve of eternal youth which I stole from the Demie Sacerdote's personal coffer. In my train are both boy and girl children, obsequious and handsome, at a fair price. I will listen to your woes, cure your lisp, guarantee a placidity of disposition. Or perhaps you would buy dragon eggs?"

"I need none of those," grunted Carcolo. "Especially dragon's eggs which hatch to lizards. As for children, Happy Valley seethes with them. Bring me a dozen sound Juggers and you may depart with a hundred children of your choice."

Dae Alvonso shook his head sadly and lurched away. Carcolo slumped against the fence, staring across the dragon pens.

The sun hung low over the crags of Mount Despoire. Evening was close at hand.

This was the most pleasant time of the Aerlith day, when the winds ceased, leaving a vast velvet quiet. Skene's blaze softened to a smoky yellow, with a bronze aureole. The clouds of the approaching evening storm gathered, rose, fell, shifted, swirled; glowing and changing in every tone of gold, orange-brown, gold-brown and dusty violet.

Skene sank; the golds and oranges became oak-brown and purple. Lightning threaded the clouds, and the rain fell in a black curtain. In the barracks men moved with vigilance, for now the dragons became unpredictable: by turns watchful, torpid, quarrelsome. With the passing of the rain, evening became night, and a cool quiet breeze drifted through the valleys. The dark sky began to burn and dazzle with the stars of the cluster. One of the most effulgent twinkled red, green, white, red, green.

Ervis Carcolo studied this star thoughtfully. One idea led to another, and presently to a course of action which seemed to dissolve the entire tangle of uncertainties and dissatisfactions which marred his life.

Carcolo twisted his mouth into a sour grimace. He must make overtures to that popinjay Joaz Banbeck. But, if this were unavoidable so be it!

Hence, the following morning, shortly after Phade the minstrel-maiden discovered the sacerdote in Joaz's study, a messenger appeared in the Vale, inviting Joaz Banbeck up to Banbeck Verge for a conference with Ervis Carcolo.

IV

ERVIS Carcolo waited on Banbeck Verge with Chief Dragon-master Bast Givven and a pair of young fuglemen. Behind, in a row, stood their mounts: four

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glistening Spiders, brachs folded, legs splayed at exactly identical angles.

These were Carcolo's newest breed. He was immoderately proud of them. The barbs surrounding the horny visages were clasped with cinnabar cabochons; a round target enameled black and studded with a central spike covered each chest. The men wore the traditional black leather breeches, with short maroon cloaks and black leather helmets, with long flaps slanting back across the ears and down to the shoulders.

The four men waited, patient or restless as their natures dictated, surveying the well-tended length of Banbeck Vale. To the south stretched fields of various food-stuffs: vetch, bellegarde, moss-cake, a loquat grove. Directly opposite, near the mouth of Clybourne Crevasse, the shape of the crater created by the explosion of the Basic ship could still be seen. North lay more fields, then the dragon compounds, consisting of black-brick barracks, a brooder, an exercise field. Beyond lay Banbeck Jambles — an area of wasteland, where ages previously a section of the cliff had fallen, creating a wilderness of tumbled rock, similar to the High Jambles under Mount Gethron, but smaller in compass.

One of the young fuglemen rather tactlessly commented upon the evident prosperity of Banbeck Vale. Ervis Carcolo listened glumly a moment or two, then turned a haughty stare toward the offender.

"Notice the dam," said the fugleman. "We waste half our water in seepage."

"True," said the other. "The rock facing is a good idea. I wonder why we don't do something similar."

Carcolo started to speak, but thought better of it. With a growling sound in his throat, he turned away. Bast Givven made a sign; the fuglemen hastily fell silent.

A few moments later Givven announced: "Joaz Banbeck has set forth."

Carcolo peered down toward Kergan's Way. "Where is his company? Does he choose to ride alone?"

"So it seems."

A few minutes later Joaz Banbeck appeared on Banbeck Verge riding a Spider caparisoned in gray and red velvet. Joaz wore a loose lounge cloak of soft brown cloth over a gray shirt and gray trousers, with a long-billed hat of blue velvet. He held up his hand in casual greeting.

Brusquely Ervis Carcolo returned the salute, and with a jerk of his head sent Givven and the fuglemen off out of ear-shot.

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CARCOLO said gruffly, "You sent me a message by old Alvonso."

Joaz nodded. "I trust he rendered my remarks accurately?"

Carcolo grinned wolfishly. "At times he felt obliged to paraphrase."

"Tactful old Dae' Alvonso."

"I am given to understand," said Carcolo, "that you consider me rash, ineffectual, callous to the best interests of Happy Valley. Alvonso admitted that you used the word 'blunderer' in reference to me."

Joaz smiled politely. "Sentiments of this sort are best transmitted through intermediaries."

Carcolo made a great show of dignified forbearance. "Apparently you feel that another Basic attack is imminent."

"Just so," agreed Joaz, "if my theory, which puts their home by the star Coralyne, is correct. In which case, as I pointed out to Alvonso, Happy Valley is seriously vulnerable."

"And why not Banbeck Vale as well?" barked Carcolo.

Joaz stared at him in surprise. "Is it not obvious? I have taken precautions. My people are housed in tunnels, rather than huts. We have several escape routes, should this prove necessary, both to the High Jambles and to Banbeck Jambles."

"Very interesting." Carcolo made an effort to soften his voice. "If your theory is accurate — and I pass no immediate judgment — then perhaps I would be wise to take similar measures. But I think in different terms. I prefer attack to passive defense."

"Admirable," said Joaz Banbeck. "Important deeds are done by men such as you."

Carcolo became a trifle pink in the face. "This is neither here nor there," he said. "I have come to propose a joint project. It is entirely novel, but carefully thought out. I have considered various aspects of this matter for several years."

"I attend you with great interest," said Joaz.

Carcolo blew out his cheeks. "You know the legends as well as I, perhaps better. Our people came to Aerlith as exiles during the War of the Ten Stars. The Nightmare Coalition apparently had defeated the Old Rule, but how the war ended—" he threw up his hands — "who can say?"

"There is a significant indication," said Joaz. "The Basics revisit Aerlith and ravage us at their pleasure. We have seen no men visiting except those who serve the Basics."

"Men?" Carcolo demanded scornfully. "I call them something else. Nevertheless, this is no more than a deduction, and we are ignorant as to the course

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of history. Perhaps Basics rule the cluster; perhaps they plague us only because we are weak and weaponless. Perhaps we are the last men. Perhaps the Old Rule is resurgent. And never forget that many years have elapsed since the Basics last appeared on Aerlith."

"Many years have elapsed since Aerlith and Coralyne were in such convenient apposition."

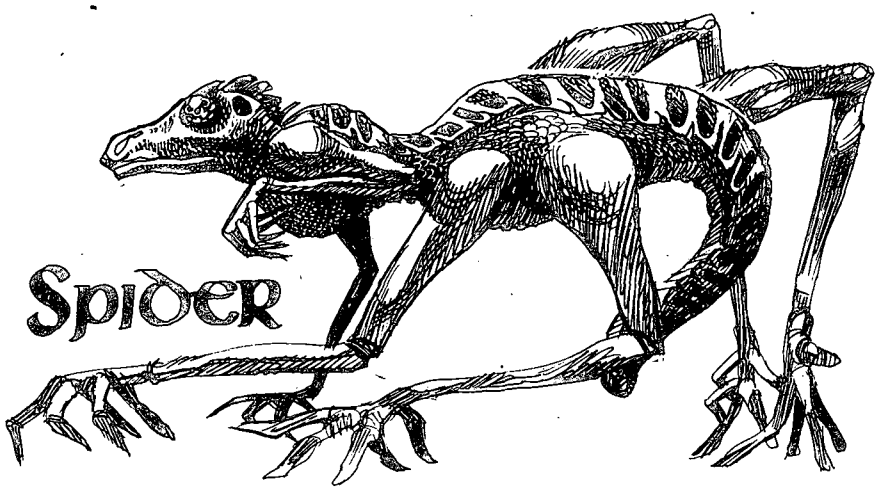
CARCOLO made an impatient gesture. "A supposition, which may or may not be relevant. Let me explain the basic axiom of my proposal. It is simple enough. I feel that Banbeck Vale and Happy Valley are too small a compass for men such as ourselves. We deserve larger scope."

Joaz agreed. "I wish it were possible to ignore the practical difficulties involved."

"I am able to suggest a method to counter these difficulties," asserted Carcolo.

"In that case," said Joaz, "power, glory and wealth are as good as ours."

Carcolo glanced at him sharply, slapped his breeches with the gold-beaded tassel to his scabbard. "Reflect," he said. "The sacerdotes inhabited Aerlith before us. How long no one can say. It is a mystery. In fact, what do we know of the sacerdotes? Next to



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nothing. They trade their metal and glass for our food. They live in deep caverns. Their creed is disassociation, reverie, detachment, whatever one may wish to call it — totally incomprehensible to one such as myself." He challenged Joaz with a look; Joaz merely fingered his long chin. "They put themselves forward as simple metaphysical cultists. Actually they are a very mysterious people. Has anyone yet seen a sacerdote woman? What of the blue lights? What of the lightning towers, what of the sacerdote magic? What of weird comings and going by night, what of strange shapes moving across the sky, perhaps to other planets?"

"The tales exist, certainly," said Joaz. "As to the degree of credence to be placed in them—"

"Now we reach the meat of my proposal!" declared Ervis Carcolo. "The creed of the sacerdotes apparently forbids shame or regard for consequence. Hence, they are forced to answer any question put to them. Nevertheless, creed or no creed, they completely befog any information an assiduous man is able to wheedle from them."

Joaz inspected him curiously. "Evidently you have made the attempt."

Ervis Carcolo nodded. "Why should I deny it? I have questioned three sacerdotes with determination and persistence. They answered all my questions with gravity and calm reflection, but told me nothing." He shook his head in vexation. "Therefore, I suggest that we apply coercion."

"You are a brave man."

Carcolo shook his head modestly. "I would dare no direct measures. But they must eat. If Banbeck Vale and Happy Valley cooperate, we can apply the very cogent persuasion of hunger. Presently their words may be more to the point."

Joaz considered a moment or two. Ervis Carcolo twitched his scabbard tassel. "Your plan," said Joaz at last, "is not a frivolous one, and is ingenious — at least at first glance. What sort of information do you hope to secure? In short, what are your ultimate aims?"

CARCOLO sidled close, prodded Joaz with his forefinger. "We know nothing of the outer worlds. We are marooned on this miserable planet of stone and wind while life passes us by. You assume that Basics rule the cluster. But suppose you are wrong? Suppose the Old Rule has returned? Think of the rich cities, the gay resorts, the palaces, the pleasure-islands! Look up into the night sky. Ponder the bounties which might be ours! You ask how can we implement these de-

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sires? I respond, the process may be so simple that the sacerdotes will reveal it without reluctance."

"You mean —"

"Communication with the worlds of men! Deliverance from this lonely little world at the edge of the universe!"

Joaz Banbeck nodded dubiously. "A fine vision. But the evidence suggests a situation far different, namely the destruction of man and the Human Empire."

Carcolo held out his hands in gesture of open-minded tolerance. "Perhaps you are right. But why should we not make inquiries of the sacerdotes? Concretely I propose as follows: that you and I agree to the mutual cause I have outlined. Next, we request an audience with the Demie Sacerdote. We put our questions. If he responds freely, well and good. If he evades, then we act together. No more food to the sacerdotes until they tell us plainly what we want to hear."

"Other valleys exist," said Joaz thoughtfully.

Carcolo made a brisk gesture. "We can deter any such trade by persuasion or by the power of our dragons."

"The essence of your idea appeals to me," said Joaz. "But I fear that all is not so simple."

Carcolo rapped his thigh smartly with the tassel. "And why not?"

"In the first place, Coralyne shines bright in the sky. This is our first concern. Should Coralyne pass and the Basics not attack — then is the time to pursue this matter. Again — and perhaps more to the point — I doubt that we can starve the sacerdotes into submission. In fact, I consider it impossible."

Carcolo blinked. "In what wise?"

"They walk naked through sleet and storm; do you think they fear hunger? And there is wild lichen to be gathered. How could we forbid this? You might dare some sort of coercion, but not I. The tales told of the sacerdotes may be superstition — or they may be understatement."

Ervis Carcolo heaved a deep disgusted sigh. "Joaz Banbeck, I took you for a man of decision. But you merely pick flaws."

"These are not flaws. They are major errors which would lead to disaster."

"Well, then. Do you have any suggestions of your own?"

JOAZ fingered his chin. "If Coralyne recedes and we are still on Aerlith — rather than in the hold of the Basic ship — then let us plan to plunder the secrets of the sacerdotes. In the meantime I strongly recommend that you prepare Happy Valley against a new raid. You are over-extended,

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with your new brooders and barracks. Let them rest, while you dig yourself secure tunnels!"

Ervis Carcolo stared straight across Banbeck Vale. "I am not a man to defend. I attack!"

"You will attack heat-beams and ion-rays with your dragons?"

Ervis Carcolo turned his gaze back to Joaz Banbeck. "Can I consider us allies in the plan I have proposed?"

"In its broadest principles, certainly. However I don't care to cooperate in starving or otherwise coercing the sacerdotes. It might be dangerous, as well as futile."

For an instant Carcolo could not control his detestation of Joaz Banbeck. His lip curled, his hands clenched. "Danger? Pah! What danger from a handful of naked pacifists?"

"We do not know that they are pacifists. We do know that they are men."

Carcolo once more became brightly cordial. "Perhaps you are right. But essentially at least we are allies."

"To a degree."

"Good. I suggest that in the case of the attack you fear, we act together, with a common strategy."

Joaz nodded distantly. "This might be effective."

"Let us coordinate our plans. Let us assume that the Basics drop down into Banbeck Vale. I suggest that your folk take refuge in Happy Valley, while the Happy Valley army joins with yours to cover their retreat. And likewise, should they attack Happy Valley, my people will take temporary refuge with you in Banbeck Vale."

Joaz laughed in sheer amusement. "Ervis Carcolo, what sort of lunatic do you take me for? Return to your valley, put aside your foolish grandiosities, dig yourself protection. And fast! Coralyne is bright!"

Carcolo stood stiffly. "Do I understand they you reject my offer of alliance?"

"Not at all. But I cannot undertake to protect you and your people if you will not help yourselves. Meet my requirements, satisfy me that you are a fit ally — then we shall speak further of alliance."

Ervis Carcolo whirled on his heel, signaled to Bast Givven and the two young fuglemen. With no further word or glance he mounted his splendid Spider, goaded him into a sudden leaping run across the Verge and up the slope toward Starbreak Fell. His men followed, somewhat less precipitously.

Joaz watched them go, shaking his head in sad wonder. Then, mounting his own Spider, he returned down the trail to the floor of Banbeck Vale.

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V

THE long Aerlith day, equivalent to six of the old Diurnal Units, passed.

In Happy Valley there was grim activity, a sense of purpose and impending decision. The dragons exercised in tighter formation. The fuglemen and cornets called orders with harsher voices. In the armory bullets were cast, powder was mixed, swords were ground and honed.

Ervis Carcolo drove himself with dramatic bravado, wearing out Spider after Spider as he sent his dragons through various evolutions. In the case of the Happy Valley forces, these were for the most part Termagants — small active dragons with rust-red scales, narrow darting heads, chisel-sharp fangs. Their brachs were strong and well-developed. They used lance, cutlass or mace with equal skill. A man pitted against a Termagant stood no chance, for the scales warded off bullets as well as any blow the man might have strength enough to deal. On the other hand a single slash of fang, the rip of a scythe-like claw, meant death to the man.

The Termagants were fecund and hardy and throve even under the conditions which existed in the Happy Valley brooders; hence their predominance in Carcolo's army. This was a situation not to the liking of Bast Givven, Chief Dragon-master, a spare wiry man with a flat crooked-nosed face, eyes black and blank as drops of ink on a plate. Habitually terse and tight-lipped, he waxed almost eloquent in opposition to the attack upon Banbeck Vale. "Look you, Ervis Carcolo. We are able to deploy a horde of Termagants, with sufficient Striding Murderers and Long-horned Murderers. But Blue Horrors, Fiends and Juggers — no! We are lost if they trap us on the fells!"

"I do not plan to fight on the fells," said Carcolo. "I will force battle upon Joaz Banbeck. His Juggers and Fiends are useless on the cliffs. And in the matter of Blue Horrors we are almost his equal."

"You overlook a single difficulty," said Bast Givven.

"And what is this?"

"The improbability that Joaz Banbeck plans to permit all this. I allow him greater intelligence than that."

"Show me evidence!" charged Carcolo. "What I know of him suggests vacillation and stupidity! So we will strike — hard!" Carcolo smacked fist into palm. "Thus we will finish the haughty Banbecks!"

Bast Givven turned to go. Car-

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STRIDING MURDERER

colo wrathfully called him back. "You show no enthusiasm for this campaign!"

"I know what our army can do and what it cannot do," said Givven bluntly. "If Joaz Banbeck is the man you think he is, we might scceed. If he has even the sagacity of a pair of grooms I listened to ten minutes ago, we face disaster."

In a voice thick with rage, Carcolo said, "Return to your Fiends and Juggers. I want them quick as Termagants."

Bast Givven went his way. Carcolo jumped on a nearby Spider, kicked it with his heels. The creature sprang forward, halted sharply, twisted its long neck about to look Carcolo in the face. Carcolo cried, "Hust, hust! Forward at speed, smartly now! Show these louts what snap and spirit mean!" The Spider jumped ahead with such vehemence that Carcolo tumbled over backward, landing on his neck, where he lay groaning.

Grooms came running and assisted him to a bench where he sat cursing in a steady low voice. A surgeon examined, pressed, prodded, recommended that Carcolo take to his couch and administered a sedative potion.

CARCOLO was carried to his apartments beneath the west wall of Happy Valley and placed

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under the care of his wives. He slept for twenty hours. When he awoke the day was half gone.

He wished to arise, but found himself too stiff to move and, groaning, lay back. Presently he called for Bast Givven, who appeared and listened without comment to Carcolo's adjurations.

Evening arrived. The dragons returned to the barracks. There was nothing to do now but wait for daybreak.

During the long night Carcolo underwent a variety of treatments: massage, hot baths, infusions and poultices. He exercised with diligence, and as the night reached its end he declared himself fit. Overhead the star Coralyne vibrated poisonous colors — red, green, white — by far the brightest star of the cluster. Carcolo refused to look up at the star, but its radiance struck through the corners of his eyes whenever he walked on the valley floor.

Dawn approached. Carcolo planned to march at the earliest moment the dragons were manageable. A flickering to the east told of the oncoming dawn storm, still invisible across the horizon. With great caution the dragons were mustered from their barracks and ordered into a marching column. There were almost three hundred Termagants; eighty-five Striding Murderers,

LONG HORNED MURDERER

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as many Long-horned Murderers; a hundred Blue Horrors; fifty-two squat, immensely powerful Fiends, their tails tipped with spiked steel balls; eighteen Juggers. They growled and muttered evilly among themselves, watching an opportunity to kick each other or to snip a leg from an unwary groom. Darkness stimulated their latent hatred for humanity — though they had been taught nothing of their past, nor the circumstances by which they had become enslaved.

The dawn lightning blazed, outlining the vertical steeples and astonishing peaks of the Malheur Mountains. Overhead passed the storm, with wailing gusts of wind and thrashing banks of rain, moving on toward Banbeck Vale. The east glowed with a gray-green pallor, and Carcolo gave the signal to march.

Still stiff and sore he hobbled to his Spider, mounted, ordered the creature into a special and dramatic curvet. Carcolo had miscalculated. Malice of the night still gripped the mind of the dragon. It ended its curvet with a lash of the neck which once again dashed Carcolo to the ground, where he lay half-mad with pain and frustration.

He tried to rise; collapsed; tried again; fainted.

Five minutes he lay unconscious, then seemed to rouse himself by sheer force of will. "Lift me," he whispered huskily. "Tie me into the saddle. We must march." This being manifestly impossible, no one made a move. Carcolo raged, finally called hoarsely for Blast Givven. "Proceed; we cannot stop now. You must lead the troops."

GIVVEN nodded glumly. This was an honor for which he had no stomach.

"You know the battle-plan," wheezed Carcolo. "Circle north of the Fang, cross the Skanse with all speed, swing north around Blue Crevasse, then south along Banbeck Verge. There Joaz Banbeck may be expected to discover you. You must deploy so that when he brings up his juggers you can topple them back with Fiends. Avoid committing our Juggers. Harry him with Termagants; reserve the Murderers to strike wherever he reaches the edge. Do you understand me?"

"As you explain it, victory is certain," muttered Bast Givven.

"And so it is, unless you blunder grievously. Ah, my back! I can't move. While the great battle rages I must sit by the brooder and watch eggs hatch! Now go! Strike hard for Happy Valley!"

Givven gave an order. The troops set forth.

Termagants darted into the lead, followed by silken Striding

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Murderers and the heavier Long-horned Murderers, their fantastic chest-spike tipped with steel. Behind came the ponderous Juggers, grunting, gurgling, teeth clashing together with the vibration of their steps. Flanking the Juggers marched the Fiends, carrying heavy cutlasses, flourishing their terminal steel balls as a scorpion carries his sting. Then at the rear came the Blue Horrors, who were both massive and quick, good climbers, no less intelligent than the Termagants. To the flanks rode a hundred men: dragon-masters, knights, fuglemen and cornets. They were armed with swords, pistols and large-bore blunderbusses.

Carcolo watched from a stretcher till the last of his forces had passed from view, then commanded himself carried back to the portal which led into the Happy Valley caves.

Never before had the caves seemed so dingy and shallow. Sourly he eyed the straggle of huts along the cliff, built of rock, slabs of resin-impregnated lichen, canes bound with tar. With the Banbeck campaign at an end, he would set about cutting new chambers and halls into the cliff. The splendid decorations of Banbeck Village were well-known. Happy Valley would be even more magnificent. The halls would glow with opal and nacre, silver and gold . . . And yet, to what end? If events went as planned, there was his great dream in prospect. And then, what consequence a few paltry decorations in the tunnels of Happy Valley?

Groaning, he allowed himself to be laid on his couch and entertained himself picturing the progress of his troops. By now they should be working down from Dangle Ridge, circling the mile-high Fang.

He tentatively stretched his arms, worked his legs. His muscles protested. Pain shot back and forth along his body — but it seemed as if the injuries were less than before . . . By now the army would be mounting the ramparts which rimmed that wide area of upland fell known as the Skanse . ... The surgeon brought Carcolo a potion. He drank and slept, to awake with a start. What was the time? His troops might well have joined battle!

He ordered himself carried to the outer portal; then, still dissatisfied, commanded his servants to transport him across the valley to the new dragon brooder, the walkway of which commanded a view up and down the valley. Despite the protests of his wives, here he was conveyed, and made as comfortable as bruises and sprains permitted.

He settled himself for an in-

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determinate wait. But news was not long in coming.

DOWN the North Trail came a cornet on a foam-bearded Spider. Carcolo sent a groom to intercept him and, heedless of aches and pains, raised himself from his couch. The cornet threw himself off his mount, staggered up the ramp, sagged exhausted against the rail.

"Ambush!" he panted. "Bloody disaster!"

"Ambush?" groaned Carcolo in a hollow voice. "Where?"

"As we mounted the Skanse Ramparts. They waited till our Termagants and Murderers were over, then charged with Horrors, Fiends and Juggers. They cut us apart, drove us back, then rolled boulders on our Juggers! Our army is broken!"

Carcolo sank back on the couch, lay staring at the sky. "How many are lost?"

"I do not know. Givven called the retreat. We withdrew in the best style possible."

Carcolo lay as if comatose. The cornet flung himself down on a bench.

A column of dust appeared to the north, which presently dissolved and separated to reveal a number of Happy Valley dragons. All were wounded. They marched, hopped, limped, dragged themselves at random, croaking, glaring, bugling. First came a group of Termagants, darting ugly heads from side to side; then a pair of Blue Horrors, brachs twisting and clasping almost like human arms; then a Jugger, massive, toad-like, legs splayed out in weariness. Even as it neared the barracks it toppled, fell with a thud and lay still, legs and talons jutting into the air.

Down from the North Trail rode Bast Givven, dust-stained and haggard. He dismounted from his drooping Spider, mounted the ramp. With a wrenching effort, Carcolo once more raised himself on the couch.

Givven reported in a voice so even and light as to seem careless, but even the insensitive Carcolo was not deceived. He asked in puzzlement: "Exactly where did the ambush occur?"

"We mounted the Ramparts by way of Chloris Ravine. Where the Skanse falls off into the ravine a porphyry outcrop juts up and over. Here they awaited us."

Carcolo hissed through his teeth. "Amazing."

Bast Givven gave the faintest of nods.

Carcolo said, "Assume that Joaz Banbeck set forth during the dawn-storm, an hour earlier than I would think possible. Assume that he forced his troops at a run. How could he reach the

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Skanse Ramparts before us even so?"

"By my reckoning," said Givven, "ambush was no threat until we had crossed the Skanse. I had planned to patrol Barchback, all the way down Blue Fell and across Blue Crevasse."

Carcolo gave somber agreement. "How then did Joaz Banbeck bring his troops to the Ramparts so soon?"

Givven turned, looked up the valley, where wounded dragons and men still straggled down the North Trail. "I have no idea."

"A drug?" puzzled Carcolo. "A potion to pacify the dragons? Could he have made bivouac on the Skanse the whole night long?"

"The last is possible," admitted Givven grudgingly. "Under Barch Spike are empty caves. If he quartered his troops here during the night, then he had only to march across the Skanse to waylay us."

Carcolo grunted. "Perhaps we have underestimated Joaz Banbeck." He sank back on his couch with a groan. "Well, then, what are our losses?"

THE reckoning made dreary news. Of the already inadequate squad of Juggers, only six remained. From a force of fifty-two Fiends, forty survived and of these five were sorely wounded. Termagants, Blue Horrors and Murderers had suffered greatly. A large number had been torn apart in the first onslaught. Many others had been toppled down the Ramparts to strew their armored husks through the detritus. Of the hundred men, twelve had been killed by bullets, another fourteen by dragon attack. A score more were wounded in various degree.

Carcolo lay back, his eyes closed and his mouth working feebly.

"The terrain alone saved us," said Givven. "Joaz Banbeck refused to commit his troops to the ravine. If there were any tactical error on either side, it was his. He brought an insufficiency of Termagants and Blue Horrors."

"Small comfort," growled Carcolo. "Where is the balance of the army?"

"We have good position on Dangle Ridge. We have seen none of Banbeck's scouts, either man or Termagant. He may conceivably believe we have retreated to the valley. In any event his main forces were still collected on the Skanse."

Carcolo, by an enormous effort, raised himself to his feet.

He tottered across the walkway to look down into the dispensary. Five Fiends crouched in vats of balsam, muttering and sighing. A Blue Horror hung in a sling, whining as surgeons cut broken fragments of armor from

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its gray flesh. As Carcolo watched, one of the Fiends raised itself high on its anterior legs, foam gushing from its gills. It cried out in a peculiar, poignant tone and fell back dead into the vat of balsam.

Carcolo turned back to Givven. "This is what you must do. Joaz Banbeck surely has sent forth patrols. Retire along Dangle Ridge. Then, taking all concealment from the patrols, swing up into one of the Despoire Cols. Tourmaline Col will serve. This is my reasoning. Banbeck will assume that you are retiring to Happy Valley, so he will hurry south behind the Fang, to attack as you come down off Dangle Ridge. As he passes below Tourmalone Col, you have the advantage. You may well destroy Joaz Banbeck there with all his troops."

Bast Givven shook his head decisively. "What if his patrols locate us in spite of our precautions? He need only follow our tracks to bottle us into Tourmaline Col, with no escape except over Mount Despoire or out on Starbreak Fell. And if we venture out on Starbreak Fell his Juggers will destroy us in minutes."

Ervis Carcolo sagged back down upon the couch. "Bring the troops back to Happy Valley. We will regroup and await another occasion."

VI

CUT into the cliff south of the crag which housed Joaz's apartments was a large chamber known as Kergan's Hall. The proportions of the room, the simplicity and lack of ornament, the massive antique furniture contributed to the sense of lingering personality, as well as an odor unique to the room. This odor exhaled from naked stone walls, the petrified moss parquetry, old wood — a rough ripe redolence which Joaz had always disliked, together with every other aspect of the room. The dimensions seemed arrogant in their extent. The lack of ornament impressed him as rude, if not brutal. One day it occurred to Joaz that he disliked not the room but Kergan Banbeck himself, together with the entire system of overblown legends which surrounded him.

The room nevertheless in many respects was pleasant. Three tall groined windows overlooked the vale. The casements were set with small square panes of green-blue glass in muntins of black ironwood. The ceiling likewise was paneled in wood, and here a certain amount of the typical Banbeck intricacy had been permitted. There were mock pilaster capitals with gargoyle heads, a frieze carved with conventionalized fern-fronds. The

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furniture consisted of three pieces: two tall carved chairs and a massive table, all polished dark wood, all of enormous antiquity.

Joaz had found a use for the room. The table supported a carefully detailed relief map of the district, on a scale of three inches to the mile. At the center was Banbeck Vale, on the right hand Happy Valley, separated by a turmoil of crags and chasms, cliffs, spikes, walls and five titanic peaks: Mount Gethron to the south, Mount Despoire in the center, Barch Spike, the Fang and Mount Halcyon to the north.

At the front of Mount Gethron lay the High Jambles, then Starbreak Fell extended to Mount Despoire and Barch Spike. Beyond Mount Despoire, between the Skanse Ramparts and Barchback, the Skanse reached all the way to the tormented basalt ravines and bluffs at the foot of Mount Halcyon.

As Joaz stood studying the map, into the room came Phade. She was mischievously quiet. But Joaz sensed her nearness by the scent of incense, in the smoke of which she had steeped herself before seeking out Joaz. She wore a traditional holiday costume of Banbeck maidens: a tight-fitting sheath of dragon intestine, with muffs of brown fur at neck, elbows and knees. A tall cylindrical hat, notched around the upper edge, perched on her rich brown curls, and from the top of this hat soared a red plume.

Joaz feigned unconsciousness of her presence. She came up behind him to tickle his neck with the fur of her neck-piece. Joaz pretended stolid indifference. Phade, not at all deceived, put on a face of woeful concern. "Must we all be slain? How goes the war?"

"For Banbeck Vale the war goes well. For poor Ervis Carcolo and Happy Valley the war goes ill indeed."

"You plan his destruction," Phade intoned in a voice of hushed accusation. "You will kill him! Poor Ervis Carcolo!"

"He deserves no better."

"But what will befall Happy Valley?"

Joaz Banbeck shrugged idly. "Changes for the better."

"Will you seek to rule?"

"Not I."

"Think!" whispered Phade. "Joaz Banbeck, Tyrant of Banbeck Vale, Happy Valley, Phosphor Gulch, Glore, the Tarn, Clewhaven and the Great Northern Rift."

"Not I," said Joaz. "Perhaps you would rule in my stead?"

"Oh! Indeed! What changes there would be! I'd dress the sacerdotes in red and yellow ribbons. I'd order them to sing and dance and drink May wine. The

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dragons I'd send south to Arcady, except for a few gentle Termagants to nursemaid the children. And no more of these furious battles. I'd burn the armor and break the swords; I'd —"

"MY dear little flutterbug," said Joaz with a laugh. "What a swift reign you'd have indeed!"

"Why swift? Why not forever? If men had no means to fight —"

"And when the Basics came down — you'd throw garlands around their necks?"

"Pah. They shall never be seen again. What do they gain by molesting a few remote valleys?"

"Who knows what they gain? We are free men. Perhaps the last free men in the universe. Who knows? And will they be back? Coralyne is bright in the sky!"

Phade became suddenly interested in the relief map. "And your current war — dreadful. Will you attack, will you defend?"

"This depends on Ervis Carcolo," said Joaz. "I need only wait till he exposes himself." Looking down at the map he added thoughtfully, "He is clever enough to do me damage, unless I move with care."

"And what if the Basics come while you bicker with Carcolo?"

Joaz smiled. "Perhaps we shall all flee to the Jambles. Perhaps we shall all fight."

"I will fight beside you," declared Phade, striking a brave attitude. "We will attack the great Basic space-ship, braving the heat-rays, fending off the power-bolts. We will storm to the very portal. We will pull the nose of the first marauder who shows himself!"

"At one point your otherwise sage strategy falls short," said Joaz. "How does one find the nose of a Basic?"

"In that case," said Phade, "we shall seize their —" She turned her head at a sound in the hall. Joaz strode across the room, flung back the door. Old Rife the porter sidled forward. "You told me to call when the bottle either overturned or broke. Well, it's done both."

Joaz pushed past Rife, ran down the corridor. "What means this?" demanded Phade. "Rife, what have you said to disturb him?"

Rife shook his head fretfully. "I am as perplexed at you. A bottle is pointed out to me. 'Watch this bottle day and night' — so I am commanded. And also, 'When the bottle breaks or tips, call me at once.' I tell myself that here in all truth is a sinecure. And I wonder, does Joaz consider me so senile that I will rest content with a make-work task such as

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watching a bottle? I am old, my jaws tremble, but I am not witless. To my surprise the bottle breaks! The explanation admittedly is simple. It fell to the floor. Nevertheless, without knowledge of what it all means, I obey orders and notify Joaz Banbeck."

Phade had been squirming impatiently. "Where then is this bottle?"

"In the studio of Joaz Banbeck."

Phade ran off as swiftly as the tight sheath about her thighs permitted: through a transverse tunnel, across Kergan's Way by a covered bridge, then up at a slant toward Joaz's apartments.

Down the long hall ran Phade, through the anteroom where a bottle lay shattered on the floor, into the studio, where she halted in astonishment. No one was to be seen. She noticed a section of shelving which stood at an angle. Quietly, timorously, she stole across the room, peered down into the workshop.

THE scene was an odd one. Joaz stood negligently, smiling a cool smile, as across the room a naked sacerdote gravely sought to shift a barrier which had sprung down across an area of the wall. But the gate was cunningly locked in place, and the sacerdote's efforts were to no avail.

He turned, glanced briefly at Joaz, then started for the exit into the studio.

Phade sucked in her breath and backed away.

The sacerdote came out into the studio, started for the door.

"Just a moment," said Joaz. "I wish to speak to you."

The sacerdote paused, turned his head in mild inquiry. He was a young man, his face bland, blank, almost beautiful. Fine transparent skin stretched over his pale bones. His eyes — wide, blue, innocent — seemed to stare without focus. He was delicate of frame and sparsely fleshed. His hands were thin, with fingers trembling in some kind of nervous imbalance. Down his back, almost to his waist, hung the mane of long light-brown hair.

Joaz seated himself with ostentatious deliberation, never taking his eyes from the sacerdote. Presently he spoke in a voice pitched at an ominous level. "I find your conduct far from ingratiating." This was a declaration requiring no response, and the sacerdote made none.

"Please sit," said Joaz. He indicated a bench. "You have a great deal of explaining to do."

Was it Phade's imagination? Or did a spark of something like wild amusement flicker and die almost instantaneously in the sacerdote's eyes? But again he

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made no response. Joaz, adapting to the peculiar rules by which communication with the sacerdotes must be conducted, asked, "Do you care to sit?"

"It is immaterial," said the sacerdote. "Since I am standing now, I will stand."

Joaz rose to his feet and performed an act without precedent. He pushed the bench behind the sacerdote, rapped the back of the knobby knees, thrust the sacerdote firmly down upon the bench. "Since you are sitting now," said Joaz, "you might as well sit."

With gentle dignity the sacerdote regained his feet. "I shall stand."

Joaz shrugged. "As you wish. I intend to ask you some questions. I hope that you will cooperate and answer with precision."

The sacerdote blinked owlishly.

"Will you do so?"

"Certainly. I prefer, however, to return the way I came."

Joaz ignored the remark. "First," he asked, "why do you come to my study?"

The sacerdote spoke carefully, in the voice of one talking to a child. "Your language is vague. I am confused and must not respond, since I am vowed to give only truth to anyone who requires it."

Joaz settled himself in his chair. "There is no hurry. I am ready for a long discussion. Let me ask you then: did you have impulses which you can explain to me, which persuaded or impelled you to come to my studio?"

"Yes."

"How many of these impulses did you recognize?"

"I don't know."

"More than one?"

"Perhaps."

"Less than ten?"

"I don't know."

"Hmm . . . Why are you uncertain?"

"I am not uncertain."

"Then why can't you specify the number as I requested?"

"There is no such number."

"I see . . . You mean, possibly, that there are several elements of a single motive which directed your brain to signal your muscles in order that they might carry you here?"

"Possibly."

Joaz's thin lips twisted in a faint smile of triumph. "Can you describe an element of the eventual motive?"

"Yes."

"Do so, then."

THERE was an imperative, against which the sacerdote was proof. Any form of coercion known to Joaz — fire, sword, thirst, mutilation — these to a sacerdote were no more than inconveniences; he ignored them as

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if they did not exist. His personal inner world was the single world of reality. Either acting upon or reacting against the affairs of the Utter Men demeaned him. Absolute passivity and absolute candor were his necessary courses of action. Understanding something of this, Joaz rephrased his command: "Can you think of an element of the motive which impelled you to come here?"

"Yes."

"What is it?"

"A desire to wander about."

"Can you think of another?"

"Yes."

"What is it?"

"A desire to exercise myself by walking."

"I see . . . Incidentally, are you trying to evade answering my question?"

"I answer such questions as you put to me. So long as I do so, so long as I open my mind to all who seek knowledge — for this is our creed — there can be no question of evasion."

"So you say. However, you have not provided me an answer that I find satisfactory."

The sacerdote's reply to the comment was an almost imperceptible widening of the pupils.

"Very well then," said Joaz Banbeck. "Can you think of another element to this complex motive we have been discussing?"

"Yes."

"What is it?"

"I am interested in antiques. I came to your study to admire your relics of the old worlds."

"Indeed?" Joaz raised his eyebrows. "I am lucky to possess such fascinating treasures. Which of my antiques interests you particularly?"

"Your books. Your maps. Your great globe of the Arch-world."

"The Arch-world? Eden?"

"This is one of its names."

Joaz pursed his lips. "So you come here to study my antiques. Well then, what other elements to this motive exist?"

The sacerdote hesitated an instant. "It was suggested to me that I come here."

"By whom?"

"By the Demie."

"Why did he so suggest?"

"I am uncertain."

"Can you conjecture?"

"Yes."

"What are these conjectures?"

The sacerdote made a small bland gesture with the fingers of one hand. "The Demie might wish to become an Utter Man, and so seeks to learn the principles of your existence. Or the Demie might wish to change the trade articles. The Demie might be fascinated by my descriptions of your antiques. Or the Demie might be curious regarding the focus of your vision-panels. Or—"

"Enough. Which of these con-

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jectures, and of other conjectures you have not yet divulged, do you consider most probable?"

"None."

JOAZ raised his eyebrows once more. "How do you justify this?"

"Since any desired number of conjectures can be formed, the denominator of any probability-ratio is variable and the entire concept becomes arithmetically meaningless."

Joaz grinned wearily. "Of the conjectures which to this moment have occurred to you, which do you regard as the most likely?"

"I suspect that the Demie might think it desirable that I come here to stand."

"What do you achieve by standing?"

"Nothing."

"Then the Demie does not send you here to stand."

To Joaz's assertion, the sacerdote made no comment.

Joaz framed a question with great care. "What do you believe that the Demie hopes you will achieve by coming here to stand?"

"I believe that he wishes me to learn how Utter Men think."

"And you learn how I think by coming here?"

"I am learning a great deal."

"How does it help you?"

"I don't know."

"How many times have you visited my study?"

"Seven times."

"Why were you chosen specially to come?"

"The synod has approved my *tand*. I may well be the next Demie."

Joaz spoke over his shoulder to Phade. "Brew tea." He turned back to the sacerdote. "What is a *tand*?"

The sacerdote took a deep breath. "My *tand* is the representation of my soul."

"Hmm. What does it look like?"

The sacerdote's expression was unfathomable. "It cannot be described."

"Do I have one?"

"No."

Joaz shrugged. "Then you can read my thoughts."

Silence.

"Can you read my thoughts?"

"Not well."

"Why should you wish to read my thoughts?"

"We are alive in the universe together. Since we are not permitted to act, we are obliged to know."

Joaz smiled skeptically. "How does knowledge help you, if you will not act upon it?"

"Events follow the Rationale, as water drains into a hollow and forms a pool."

"Bah!" said Joaz, in sudden ir-

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ritation. "Your doctrine commits you to non-interference in our affairs, nevertheless you allow your 'Rationale' to creat conditions by which events are influenced. Is this correct?"

"I am not sure. We are a passive people."

"Still, your Demie must have had a plan in mind when he sent you here. Is this not correct?"

"I cannot say."

Joaz veered to a new line of questioning. "Where does the tunnel behind my workshop lead?"

"Into a cavern."

PHADE set a silver pot before Joaz. He poured and sipped reflectively. Of contests there were numberless varieties. He and the sacerdote were engaged in a hide-and-seek game of words and ideas. The sacerdote was schooled in patience and supple evasions, to counter which Joaz could bring pride and determination. The sacerdote was handicapped by an innate necessity to speak truth. Joaz, on the other hand, must grope like a man blindfolded, unacquainted with the goal he sought, ignorant of the prize to be won. Very well, thought Joaz, let us continue. We shall see whose nerves fray first. He offered tea to the sacerdote, who refused with a shake of the head so quick and of such small compass as to seem a shudder.

Joaz made a gesture signifying it was all the same to him. "Should you desire sustenance or drink," he said, "please let it be known. I enjoy our conversation so inordinately that I fear I may prolong it to the limits of your patience. Surely you would prefer to sit?"

"No."

"As you wish. Well, then, back to our discussion. This cavern you mentioned: is it inhabited by sacerdotes?"

"I fail to understand your question."

"Do sacerdotes use the cavern?"

"Yes."

Eventually, fragment by fragment, Joaz extracted the information that the cavern connected with a series of chambers, in which the sacerdotes smelted metal, boiled glass, ate, slept, performed their rituals. At one time there had been an opening into Banbeck Vale, but long ago this had been blocked. Why? There were wars throughout the cluster; bands of defeated men were taking refuge upon Aerlith, settling in rifts and valleys. The sacerdotes preferred a detached existence and had shut their caverns away from sight. Where was this opening? The sacerdote seemed vague. To the north end of the valley. Behind Banbeck Jambles?

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Possibly. But trading between men and sacerdotes was conducted at a cave entrance below Mount Gethron. Why? A matter of usage, declared the sacerdote. In addition this location was more readily accessible to Happy Valley and Phosphor Gulch. How many sacerdotes lived in these caves? Uncertainty. Some might have died, others might have been born. Approximately how many this morning? Perhaps five hundred.

At this juncture the sacerdote was swaying and Joaz was hoarse. "Back to your motive — or the elements of your motives — for coming to my studio. Are they connected in any manner with the star Coralyne, and a possible new coming of the Basics, or the grephs, as they were formerly called?"

Again the sacerdote seemed to hesitate. Then: "Yes."

"Will the sacerdotes help us against the Basics, should they come?"

"No." This answer was terse and definite.

"But I assume that the sacerdotes wish the Basics driven off?"

No answer.

Joaz rephrased his words. "Do the sacerdotes wish the Basics repelled from Aerlith?"

"The Rationale bids us stand aloof from affairs of men and non-men alike."

Joaz curled his lip. "Suppose the Basics invaded your cave and dragged you off to the Coralyne planet. Then what?"

THE sacerdote almost seemed to laugh. "The question cannot be answered."

"Would you resist the Basics if they made the attempt?"

"I cannot answer your question."

Joaz laughed. "But the answer is not no?"

The sacerdote assented.

"Do you have weapons, then?"

The sacerdote's mild blue eyes seemed to droop. Secrecy? Fatigue? Joaz repeated the question.

"Yes," said the sacerdote. His knees sagged, but he snapped them tight.

"What kind of weapons?"

"Numberless varieties. Projectiles, such as rocks. Piercing weapons, such as broken sticks. Cutting and slashing weapons, such as cooking utensils." His voice began to fade as if he were moving away. "Poisons: arsenic, sulfur, triventidum, acid, black-spore. Burning weapons, such as torches and lenses to focus the sunlight. Weapons to suffocate: ropes, nooses, slings and cords. Cisterns, to drown the enemy . . ."

"Sit down. Rest," Joaz urged him. "Your inventory interests me, but its total effect seems inadequate. Have you other weap-

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ons which might decisively repel the Basics should they attack you?"

The question, by design or chance, was never answered. The sacerdote sank to his knees, slowly, as if praying. He fell forward on his face, then sprawled to the side. Joaz sprang forward, yanked up the drooping head by its hair. The eyes, half-open, revealed a hideous white expanse. "Speak!" croaked Joaz. "Answer my last question! Do you have weapons — or a weapon — to repel a Basic attack?"

The pallid lips moved. "I don't know."

Joaz frowned, peered into the waxen face, drew back in bewilderment. "The man is dead," he whispered.

VII

PHADE looked up from drowsing on a couch, face pink, hair tossed. "You have killed him!" she cried in a voice of hushed horror.

"No. He has died — or caused himself to die."

Phade staggered blinking across the room, sidled close to Joaz, who pushed her absently away. Phade scowled, shrugged and then, as Joaz paid her no heed, marched from the room.

Joaz sat back, staring at the limp body. "He did not tire," muttered Joaz, "until I verged upon secrets."

Presently he jumped to his feet, went to the entry hall, sent Rife to fetch a barber. An hour later the corpse, stripped of hair, lay on a wooden pallet covered by a sheet, and Joaz held in his hands a rude wig fashioned from the long hair.

The barber departed. Servants carried away the corpse. Joaz stood alone in his studio, tense and light-headed. He removed his garments, to stand naked as the sacerdote. Gingerly he drew the wig across his scalp and examined himself in a mirror. To a casual eye, where the difference? Something was lacking: the torc. Joaz fitted it about his neck. Once more he examined his reflection, with dubious satisfaction.

He entered the workshop, hesitated, disengaged the trap, cautiously pulled away the stone slab. On hands and knees he peered into the tunnel and, since it was dark, held forward a glass vial of luminescent algae. In the faint light the tunnel seemed empty.

Irrevocably putting down his fears, Joaz clambered through the opening. The tunnel was narrow and low. Joaz moved forward tentatively, nerves thrilling with wariness. He stopped often to listen, but heard nothing but the whisper of his own pulse.

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After perhaps a hundred yards the tunnel broke out into a natural cavern. Joaz stopped and stood indecisively straining his ears through the gloom. Luminescent vials fixed to the walls at irregular intervals provided a measure of light, enough to delineate the direction of the cavern. It seemed to be north, parallel to the length of the valley. Joaz set forth once again, halting to listen every few yards.

To the best of his knowledge the sacerdotes were a mild unaggressive folk, but they were also intensely secretive. How would they respond to the presence of an interloper? Joaz could not be sure, and proceeded with great caution.

The cavern rose, fell, widened, narrowed. Joaz presently came upon evidences of use: small cubicles, hollowed into the walls, lit by candelabra holding tall vials of luminous stuff. In two of the cubicles Joaz came upon sacerdotes, the first asleep on a reed rug, the second sitting crosslegged, gazing fixedly at a contrivance of twisted metal rods. They gave Joaz no attention; he continued with a more confident step.

THE cave sloped downward, widened like a cornucopia and suddenly broke into a cavern so enormous that Joaz thought for a startled instant that he had stepped out into the starless night.

The ceiling reached beyond the flicker of the myriad lamps, fires and glowing vials. Ahead and to the left smelters and forges were in operation; then a twist in the cavern wall obscured something of the view. Joaz glimpsed a tiered, tubular construction which seemed to be some sort of workshop, for a large number of sacerdotes were occupied at complicated tasks. To the right was a stack of bales, a row of bins containing goods of unknown nature.

Joaz for the first time saw sacerdote women: neither the nymphs nor the half-human witches of popular legend. Like the men they seemed pallid and frail, with sharply defined features; like the man they moved with care and deliberation; like the men they wore only their waist-long hair. There was little conversation and no laughter. Rather there was an atmosphere of not unhappy placidity and concentration. The cavern exuded a sense of time, use and custom. The stone floor was polished by endless padding of bare feet. The exhalations of many generations had stained the walls.

No one heeded Joaz.

He moved slowly forward, keeping to the shadows, and paused under the stack of bales. To the right the cavern dwindled

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by irregular proportions into a vast horizontal funnel, receding, twisting, telescoping, losing all reality in the dim light.

Joaz searched the entire sweep of vast cavern. Where would be the armory, with the weapons whose existence the sacerdote, by the very act of dying, had promised him? Joaz turned his attention once more to the left, straining to see detail in the odd tiered workshop which rose fifty feet from the stone floor. A strange edifice, thought Joaz, craning his neck; one whose nature he could not entirely comprehend. But every aspect of the great cavern — so close beside Banbeck Vale, and so remote — was strange and marvelous. Weapons? They might be anywhere. Certainly he dared seek no further for them.

There was nothing more he could learn without risk of discovery. He turned back the way he had come: up the dim passage, past the occasional side cubicles, where the two sacerdotes remained as he had found them before: the one asleep, the other intent on the contrivance of twisted metal. He plodded on and on.

Had he come so far? Where was the fissure which led to his own apartments? Had he passed it by, must he search? Panic rose in his throat, but he continued, watching carefully. There, he had not gone wrong. There it opened to his right, a fissure almost dear and familiar. He plunged into it, walked with long loping strides, like a man under water, holding his luminous tube ahead.

An apparition rose before him, a tall white shape.

Joaz stood rigid. The gaunt figure bore down upon him. Joaz pressed against the wall. The figure stalked forward, and suddenly shrank to human scale. It was the young sacerdote whom Joaz had shorn and left for dead. He confronted Joaz, mild blue eyes bright with reproach and contempt. "Give me my torc."

WITH numb fingers Joaz removed the golden collar. The sacerdote took it, but made no move to clasp it upon himself. He looked at the hair which weighed heavy upon Joaz's scalp. With a foolish grimace Joaz doffed the disheveled wig, proffered it. The sacerdote sprang back as if Joaz had become a cave-goblin. Sidling past, as far from Joaz as the wall of the passage allowed, he paced swiftly off down the tunnel. Joaz dropped the wig to the floor, stared down at the unkempt pile of hair. He turned and looked after the sacerdote, a pallid figure which soon became one with the murk. Slowly Joaz continued up the tunnel.

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There. An oblong blank of light, the opening to his workshop. He crawled through, back to the real world. Savagely, with all his strength, he thrust the slab back in the hole and slammed down the gate which originally had trapped the sacerdote.

Joaz's garments lay where he had tossed them. Wrapping himself in a cloak, he went to the outer door and looked forth into the anteroom, where Rife sat dozing. Joaz snapped his fingers. "Fetch masons, with mortar, steel and stone."

Joaz bathed with diligence, rubbing himself time after time with emulsion, rinsing and re-rinsing himself. Emerging from the bath he took the waiting masons into his workshop and ordered the sealing of the hole.

Then he took himself to his couch. Sipping a cup of wine, he let his mind rove and wander . . .

Recollection became reverie. Reverie became dream. Joaz once again traversed the tunnel, on feet light as thistledown, down the long cavern, and the sacerdotes in their cubicles now raised their heads to look after him. At last he stood in the entrance to the great underground void, and once more looked right and left in awe. Now he drifted across the floor, past sacerdotes laboring earnestly over fires and anvils. Sparks rose from retorts, blue gas flickered above melting metal.

Joaz moved beyond to a small chamber cut into the stone. Here sat an old man, thin as a pole, his waist-long mane of hair snow-white. The man examined Joaz with fathomless blue eyes, and spoke, but his voice was muffled, inaudible. He spoke again; the words rang loud in Joaz's mind.

"I BRING you here to caution you, lest you do us harm, and with no profit to yourself. The weapon you seek is both non-existent and beyond your imagination. Put it outside your ambition."

By great effort Joaz managed to stammer, "The young sacerdote made no denial. This weapon must exist!"

"Only with the narrow limits of special interpretation. The lad can speak no more than the literal truth, nor can he act with other than grace. How can you wonder why we hold ourselves apart? You Utter folk find purity incomprehensible; you thought to advantage yourself, but achieved nothing but an exercise in rat-like stealth. Lest you try again with greater boldness I must abase myself to set matters correct. I assure you, this so-called weapon is absolutely beyond your control."

First shame, then indignation

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came over Joaz. He cried out, "You do not understand my urgencies! Why should I act differently? Coralyne is close; the Basics are at hand. Are you not men? Why will you not help us defend the planet?"

The Demie shook his head, and the white hair rippled with hypnotic slowness. "I quote you the Rationale: passivity, complete and absolute. This implies solitude, sanctity, quiescence, peace. Can you imagine the anguish I risk in speaking to you? I intervene, I interfere, at vast pain of the spirit. Let there be an end to it. We have made free with your studio, doing you no harm, offering you no indignity. You have paid a visit to our hall, demeaning a noble young man in the process. Let us be quits! Let there be no further spying on either side. Do you agree?"

Joaz heard his voice respond, quite without his conscious prompting. It sounded more nasal and shrill than he liked. "You offer this agreement now when you have learned your fill of my secrets, but I know none of yours."

The Demie's face seemed to recede and quiver. Joaz read contempt, and in his sleep he tossed and twitched. He made an effort to speak in a voice of calm reason: "Come, we are men together. Why should we be at odds? Let us share our secrets, let each help the other. Examine my archives at your leisure, and then allow me to study this existent but non-existent weapon. I swear it shall be used only against the Basics, for the protection of both of us."

The Demie's eyes sparkled. "No."

"Why not?" argued Joaz. "Surely you wish us no harm?"

"We are detached and passionless. We await your extinction. You are the Utter men, the last of humanity. And when you are gone, your dark thoughts and grim plots will be gone. Murder and pain and malice will be gone."

"I cannot believe this," said Joaz. "There may be no men in the cluster, but what of the universe? The Old Rule reached far! Sooner or later men will return to Aerlith."

The Demie's voice became plangent. "Do you think we speak only from faith? Do you doubt our knowledge?"

"The universe is large. The Old Rule reached far."

"The last men dwell on Aerlith," said the Demie. "The Utter men and the Sacerdotes. You shall pass; we will carry forth the Rationale like a banner of glory, through all the worlds of the sky."

"And how will you transport

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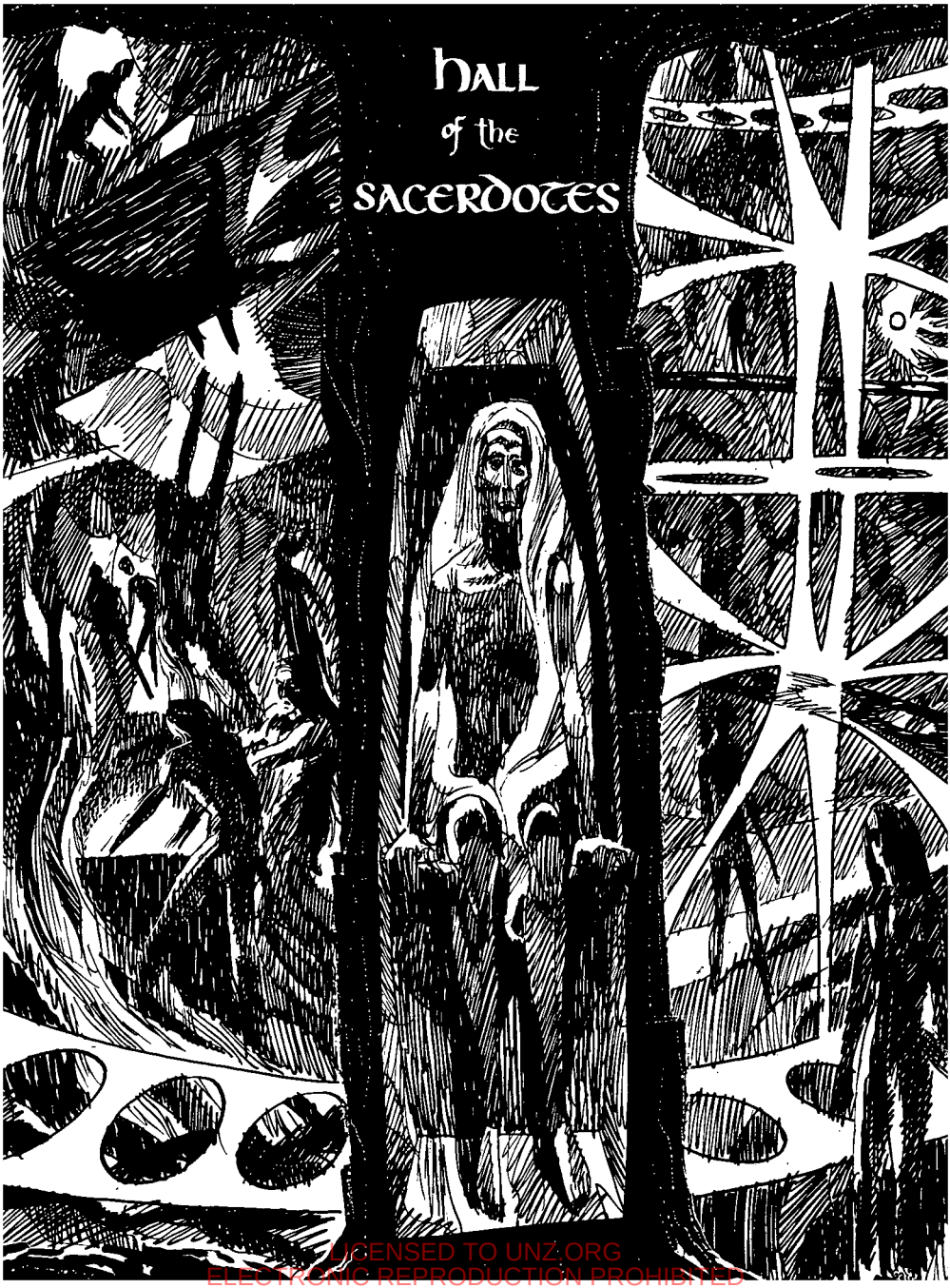

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yourselves on this mission?" Joaz asked cunningly. "Can you fly to the stars as naked as you walk the fells?"

"There will be a means. Time is long."

"For your purposes, Time needs to be long. Even on the Coralyne planets there are men. Enslaved, reshaped in body and mind, but men. What of them? It seems that you are wrong, that you are guided by faith indeed."

THE Demie fell silent. His face seemed to stiffen.

"Are these not facts?" asked Joaz. "How do you reconcile them with your faith?"

The Demie said mildly, "Facts can never be reconciled with faith. By our faith, these men, if they exist, will also pass. Time is long. O the worlds of brightness: they await us!"

"It is clear," said Joaz, "that you ally yourselves with the Basics and hope for our destruction. This can only change our attitudes toward you. I fear that Ervis Carcolo was right and I wrong."

"We remain passive," said the Demie. His face wavered, seemed to swim with mottled colors. "Without emotion, we will stand witness to the passing of the Utter men, neither helping nor hindering."

Joaz spoke in fury. "Your faith, your Rationale — whatever you call it — misleads you. I make you this threat: if you fail to help us, you will suffer as we suffer."

"We are passive. We are indifferent."

"What of your children? The Basics make no difference between us. They will herd you to their pens as readily as they do us. Why should we fight to protect you?"

The Demie's face faded, became splotched with transparent mist. His eyes glowed like rotten meat. "We need no protection," he howled. "We are secure."

"You will suffer our fate," cried Joaz, "I promise you this!"

The Demie collapsed suddenly into a small dry husk, like a dead mosquito. With incredible speed, Joaz fled back through the caves, the tunnels, up through his workroom, his studio, into his bed chamber where now he jerked upright, eyes starting, throat distended, mouth dry.

The door opened; Rife's head appeared. "Did you call, sir?"

Joaz raised himself on his elbows and looked around the room. "No. I did not call."

Rife withdrew. Joaz settled back on the couch, lay staring at the ceiling.

He had dreamed a most peculiar dream. Dream? A synthesis of his own imaginings? Or, in all

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verity, a confrontation and exchange between two minds? Impossible to decide, and perhaps irrelevant. The event carried its own conviction.

Joaz swung his legs over the side of the couch and blinked at the floor. Dream or colloquy, it was all the same. He rose to his feet, donned sandals and a robe of yellow fur, limped morosely up to the Council Room and stepped out on a sunny balcony.

The day was two-thirds over. Shadows hung dense along the western cliffs. Right and left stretched Banbeck Vale. Never had it seemed more prosperous or more fruitful, and never before unreal: as if he were a stranger to the planet. He looked north along the great bulwark of stone which rose sheer to Banbeck Verge. This too was unreal, a façade behind which lived the sacerdotes. He gauged the rock face, superimposing a mental projection of the great cavern. The cliff toward the north end of the vale must be scarcely more than a shell!

Joaz turned his attention to the exercise field, where Juggers were thudding briskly through defensive evolutions. How strange was the quality of life, which had produced Basic and Jugger, sacerdote and himself. He thought of Ervis Carcolo, and wrestled with sudden exasperation. Carcolo was a distraction most unwelcome at the present time. There would be no tolerance when Carcolo was finally brought to account.

A light step behind him, the pressure of fur, the touch of gay hands, the scent of incense. Joaz's tensions melted.

If there were no such creatures as minstrel-maidens, it would be necessary to invent them.

DEEP under Banbeck Scarp, in a cubicle lit by a twelve-vial candelabra, a naked white-haired man sat quietly. On a pedestal at the level of his eyes rested his *tand*, an intricate construction of gold rods and silver wire, woven and bent seemingly at random. The fortuitousness of the design, however, was only apparent. Each curve symbolized an aspect of Final Sentience. The shadow cast upon the wall represented the Rationale, ever-shifting, always the same. The object was sacred to the sacerdotes, and served as a source of revelation.

There was never an end to the study of the *tand*. New intuitions were continually derived from some heretofore-overlooked relationship of angle and curve. The nomenclature was elaborate: each part, juncture, sweep and twist had its name; each aspect of the relationships between the various parts was likewise categorized. Such was the cult of the

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tand: abstruse, exacting, without compromise. At his puberty rites the young sacerdote might study the original *tand* for as long as he chose. Then each must construct a duplicate *tand,* relying upon memory alone. Then occurred the most significant event of his lifetime: the viewing of his *tand* by a synod of elders.

In awesome stillness, for hours at a time they would ponder his creation, weigh the infinitesimal variations of proportion, radius, sweep and angle. So they would infer the initiate's quality, judge his personal attributes, determine his understanding of Final Sentience, the Rationale and the Basis.

Occasionally the testimony of the *tand* revealed a character so tainted as to be reckoned intolerable. The vile *tand* would be cast into a furnace, the molten metal consigned to a latrine, the unlucky initiate expelled to the face of the planet, to live on his own terms.

The naked white-haired Demie, contemplating his own beautiful *tand,* sighed, moved restlessly. He had been visited by an influence so ardent, so passionate, so simultaneously cruel and tender, that his mind was oppressed. Unbidden, into his mind, came a dark seep of doubt.

Can it be, he asked himself, that we have insensibly wandered from the true Rationale? Do we study our *tands* with blinded eyes? . . . How to know, oh how to know! All is relative ease and facility in orthodoxy, yet how can it be denied that good is in itself undeniable? Absolutes are the most uncertain of all formulations, while the uncertainties are the most real . . .

Twenty miles over the mountains, in the long pale light of the Aerlith afternoon, Ervis Carcolo planned his own plans. "By daring, by striking hard, by cutting deep can I defeat him! In resolve, courage and endurance, I am more than his equal. Not again will he trick me, to slaughter my dragons and kill my men! Oh, Joaz Banbeck, how I will pay you for your deceit!" He raised his arms in wrath. "Oh Joaz Banbeck, you whey-faced sheep!" Carcolo smote the air with his fist. "I will crush you like a clod of dry moss!"

He frowned and rubbed his round red chin. But how? Where? He had every advantage! Carcolo pondered his possible strategems. "He will expect me to strike. So much is certain. Doubtless he will again wait in ambush. So I will patrol every inch, but this too he will expect and so be wary lest I thunder upon him from above. Will he hide behind Despoire, or along North-

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guard, to catch me as I cross the Skanse? If so, I must approach by another route — through Maudlin Pass and under Mount Gethron? Then, if he is tardy in his march I will meet him on Banbeck Verge. And if he is early, I stalk him through the peaks and chasms . . ."

VIII

WITH the cold rain of dawn pelting down upon them, with the trail illuminated only by lightning-glare, Ervis Carcolo, his dragons and his men set forth. When the first sparkle of sunlight struck 'Mount Despoire, they had already traversed Maudlin Pass.

So far, so good, exulted Ervis Carcolo. He stood high in his stirrups to scan Starbreak Fell. No sign of the Banbeck forces. He waited, scanning the far edge of Northguard Ridge, black against the sky. A minute passed. Two minutes. The men beat their hands together, the dragons rumbled and muttered fretfully.

Impatience began to prickle along Carcolo's ribs. He fidgeted and cursed. Could not the simplest of plans be carried through without mistake? But now the flicker of a heliograph from Barch Spike, and another to the southeast from the slopes of Mount Gethron. Carcolo waved forward his army; the way lay clear across Starbreak Fell. Down from Maudlin Pass surged the Happy Valley army: first the Long-horned Murderers, steel-spiked and crested with steel prongs; then the rolling red seethe of the Termagants, darting their heads as they ran; and, behind, the balance of the forces.

Starbreak Fell spread wide before them, a rolling slope strewn with flinty meteoric fragments which glinted like flowers on the gray-green moss. To all sides rose majestic peaks, snow blazing white in the clear morning light: Mount Gethron, Mount Despoire, Barch Spike and, far to the south, Clew Taw.

The scouts converged from left and right. They brought identical reports: no sign of Joaz Banbeck or his troops. Carcolo began to toy with a new possibility. Perhaps Joaz Banbeck had not deigned to take the field. The idea enraged him and filled him with a great joy: if so, Joaz would pay dearly for his neglect.

Halfway across Starbreak Fell they came upon a pen occupied by two hundred of Joaz Banbeck's spratling Fiends. Two old men and a boy tended the pen, and watched the Happy Valley horde advance with manifest terror.

But Carcolo rode past leaving

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the pen unmolested. If he won the day, it would become part of his spoils. If he lost, the spratling Fiends could do him no harm.

The old men and the boy stood on the roof of their turf hut, watching Carcolo and his troops pass: the men in black uniforms and black peaked caps with back-slanting ear-flaps; the dragons bounding, crawling, loping, plodding, according to their kind, scales glinting: the dull red and maroon of Termagants; the poisonous shine of the Blue Horrors; the black-green Fiends; the gray and brown Juggers and Murderers. Ervis Carcolo rode on the right flank, Bast Givven rode to the rear. And now Carcolo hastened the pace, haunted by the anxiety that Joaz Banbeck might bring his Fiends and Juggers up Banbeck Scarp before he arrived to thrust him back — assuming that Joaz Banbeck had been caught napping.

But Carcolo reached Banbeck Verge without challenge.

He shouted out in triumph, waved his cap high. "Joaz Banbeck the sluggard! Let him try now the ascent of Banbeck Scarp!" And Ervis Carcolo surveyed Banbeck Vale with the eye of a conqueror.

BAST Givven seemed to share none of Carcolo's triumph, and kept an uneasy watch to north and south and to the rear.

Carcolo observed him peevishly from the corner of his eye and presently called out, "Ho, ho, then! What's amiss?"

"Perhaps much. Perhaps nothing," said Bast Givven, searching the landscape.

Carcolo blew out his mustaches. Givven went on, in the cool voice which so completely irritated Carcolo. "Joaz Banbeck seems to be tricking us as before."

"Why do you say this?"

"Judge for yourself. Would he allow us advantage without claiming a miser's price?"

"Nonsense!" muttered Carcolo. "The sluggard is fat with his last victory." But he rubbed his chin and peered uneasily down into Banbeck Vale. From here it seemed curiously quiet. There was a strange inactivity in the fields and barracks. A chill began to grip Carcolo's heart — then he cried out. "Look at the brooder: there are the Banbeck dragons!"

Givven squinted down into the vale, glanced sidewise at Carcolo. "Three Termagants, in egg." He straightened, abandoned all interest in the vale and scrutinized the peaks and ridges to the north and east. "Assume that Joaz Banbeck set out before dawn, came up to the Verge, by the Slickenslides, crossed Blue Fell in strength —"

"What of Blue Crevasse?"

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"He avoids Blue Crevasse to the north, comes over Barchback, steals across the Skanse and around Barch Spike . . ."

Carcolo studied Northguard Ridge with new and startled awareness. A quiver of movement, the glint of scales?

"Retreat!" roared Carcolo. "Make for Barch Spike! They're behind us!"

Startled, his army broke ranks, fled across Banbeck Verge, up into the harsh spurs of Barch Spike. Joaz, his strategy discovered, launched squads of Murderers to intercept the Happy Valley army, to engage and delay and, if possible, deny them the broken slopes of Barch Spike.

Carcolo calculated swiftly. His own Murderers he considered his finest troops, and held them in great pride. Purposely now he delayed, hoping to engage the Banbeck skirmishers, quickly destroy them and still gain the protection of the Barch declivities.

The Banbeck Murderers, however, refused to close, and scrambled for height up Barch Spike. Carcolo sent forward his Termagants and Blue Horrors.

With a horrid snarling the two lines met. The Banbeck Termagants rushed up, to be met by Carcolo's Striding Murderers and forced into humping pounding flight.

The main body of Carcolo's troops, excited at the sight of retreating foes, could not be restrained. They veered off from Barch Spike, plunged down upon Starbreak Fell. The Striding Murderers overtook the Banbeck Termagants, climbed up their backs, toppled them over squealing and kicking, then knifed open the exposed pink bellies.

Banbeck's Long-horned Murderers came circling, struck from the flank into Carcolo's Striding Murderers, goring with steel-tipped horns, impaling on lances.

Somehow they overlooked Carcolo's Blue Horrors who sprang down upon them. With axes and maces they laid the Murderers low, performing the rather grisly entertainment of clambering on a subdued Murderer, seizing the horn, stripping back horn, skin and scales, from head to tail. So Joaz Banbeck lost thirty Termagants and perhaps two dozen Murderers. Nevertheless, the attack served its purpose, allowing him to bring his knights, Fiends and Juggers down from Northguard before Carcolo could gain the heights of Barch Spike.

Carcolo retreated in a slantwise line up the pocked slopes, and meanwhile sent six men across the fell to the pen where the spratling Fiends milled in fear at the battle. The men broke

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the gates, struck down the two old men, herded the young Fiends across the fell toward the Banbeck troops. The hysterical spratlings obeyed their instincts. They clasped themselves to the neck of whatever dragon they first encountered, which thereupon became sorely hampered, for its own instincts prevented it from detaching the spratling by force.

THIS ruse, a brilliant improvisation, created enormous disorder among the Banbeck troops. Ervis Carcolo now charged with all his power directly into the Banbeck center. Two squads of Termagants fanned out to harass the men. His Murderers — the only category in which he outnumbered Joaz Banbeck — were sent to engage Fiends, while Carcolo's own Fiends, pampered, strong, glistening with oily strength, snaked in toward the Juggers. Under the great brown hulks they darted, lashing the fifty-pound steel ball at the tip of their tails against the inner side of the Jugger's legs.

A roaring melee ensued. Battle-lines were uncertain. Both men and dragons were crushed, torn apart, hacked to bits. The air sang with bullets, whistled with steel, reverberated to trumpeting, whistles, shouts, screams and bellows.

The reckless abandon of Carcolo's tactics achieved results out of proportion to his numbers. His Fiends burrowed ever deeper into the crazed and almost helpless Banbeck Juggers, while the Carcolo Murderers and Blue Horrors held back the Banbeck Fiends. Joaz Banbeck himself, assailed by Termagants, escaped with his life only by fleeing around behind the battle, where he picked up the support of a squad of Blue Horrors. In a fury he blew a withdrawal signal, and his army backed off down the slopes, leaving the ground littered with struggling and kicking bodies.

Carcolo, throwing aside all restraint, rose in his saddle and signaled to commit his own Juggers, which so far he had treasured like his own children.

Shrilling, hiccuping, they lumbered down into the seethe, tearing away great mouthfuls of flesh to right and left, ripping apart lesser dragons with their brachs, treading on Termagants, seizing Blue Horrors and Murderers, flinging them wailing and clawing through the air. Six Banbeck knights sought to stem the charge, firing their muskets point-blank into the demoniac faces; they went down and were seen no more.

Down on Starbreak Fell tumbled the battle. The nucleus of the fighting became less concen-

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trated, the Happy Valley advantage dissipated. Carcolo hesitated, a long heady instant.

He and his troops alike were afire; the intoxication of unexpected success tingled in their brains — but here on Starbreak Fell, could they counter the odds posed by the greater Banbeck forces? Caution dictated that Carcolo withdraw up Barch Spike, to make the most of his limited victory. Already a strong platoon of Fiends had grouped and were maneuvering to charge his meager force of Juggers. Bast Givven approached, clearly expecting the word to retreat. But Carcolo still waited, reveling in the havoc being wrought by his paltry six Juggers.

Bast Givven's saturnine face was stern. "Withdraw, withdraw! It's annihilation when their flanks bear in on us!"

Carcolo seized his elboe. "Look! See where those Fiends gather, see where Joaz Banbeck rides! As soon as they charge, send six Striding Murderers from either side; close in on him, kill him!"

Givven opened his mouth to protest, looked where Carcolo pointed, rode to obey the orders.

HERE came the Banbeck Fiends, moving with stealthy certainty toward the Happy Valley Juggers. Joaz, raising in his saddle, watched their progress. Suddenly from either side the Striding Murderers were on him. Four of his knights and six young cornets, screaming alarm, dashed back to protect him; there was clanging of steel on steel and steel on scale. The Murderers fought with sword and mace. The knights, their muskets useless, countered with cutlasses, one by one going under.

Rearing on hind legs the Murderer corporal hacked down at Joaz, who desperately fended off the blow. The Murderer raised sword and mace together — and from fifty yards a musket pellet smashed into its ear. Crazy with pain, it dropped its weapons, fell forward upon Joaz, writhing and kicking. Banbeck Blue Horrors came to attack; the Murderers darted back and forth over the thrashing corporal, stabbing down at Joaz, kicking at him, finally fleeing the Blue Horrors.

Ervis Carcolo groaned in disappointment. By a half-second only had he fallen short of victory. Joaz Banbeck, bruised, mauled, perhaps wounded, had escaped with his life.

Over the crest of the hill came a rider: an unarmed youth whipping a staggering Spider. Bast Givven pointed him out to Carcolo. "A messenger from the Valley, in urgency."

The lad careened down the fell

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toward Carcolo, shouting ahead, but his message was lost in the din of battle. At last he drew close. "The Basics, the Basics!"

Carcolo slumped like a half-empty bladder. "Where?"

"A great black ship, half the valley wide. I was up on the heath, I managed to escape." He pointed, whimpered.

"Speak, boy!" husked Carcolo. "What do they do?"

"I did not see; I ran to you."

Carcolo gazed across the battle-field; the Banbeck Fiends had almost reached his Juggers, who were backing slowly, with heads lowered, fangs fully extended.

Carcolo threw up his hands in despair. He ordered Givven, "Blow a retreat, break clear!"

Waving a white kerchief he rode around the battle to where Joaz Banbeck still lay on the ground, the quivering Murderer only just now being lifted from his legs. Joaz stared up, his face white as Carcolo's kerchief. At the sight of Carcolo his eyes grew wide and dark, his mouth became still.

Carcolo blurted, "The Basics have come once more; they have dropped into Happy Valley, they are destroying my people."

JOAZ Banbeck, assisted by his knights, gained his feet. He stood swaying, arms limp, looking silently into Carcolo's face.

Carcolo spoke once more. "We must call truce. This battle is waste! With all our forces let us march to Happy Valley and attack the monsters before they destroy all of us! Ah, think what we could have achieved with the weapons of the sacerdotes!"

Joaz stood silent. Another ten seconds passed. Carcolo cried angrily, "Come now, what do you say?"

In a hoarse voice Joaz spoke, "I say no truce. You rejected my warning. You thought to loot Banbeck Vale. I will show you no mercy."

Carcolo gaped, his mouth a red hole under the sweep of his mustaches. "But the Basics — "

"Return to your troops. You as well as the Basics are my enemy. Why should I choose between you? Prepare to fight for your life; I give you no truce."

Carcolo drew back face as pale as Joaz's own. "Never shall you rest! Even though you win this battle here on Starbreak Fell, yet you shall never know victory. I will persecute you until you cry for relief."

Banbeck motioned to his knights. "Whip this dog back to his own."

Carcolo backed his Spider from the threatening flails, turned, loped away.

The tide of battle had turned.

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The Banbeck Fiends now had broken past his Blue Horrors. One of his Juggers was gone; another, facing three sidling Fiends, snapped its great jaws, waved its monstrous sword. The Fiends flicked and feinted with their steel balls, scuttled forward. The Jugger chopped, shattered its sword on the rock-hard armor of the Fiends; they were underneath, slamming their steel balls into the monstrous legs. It tried to hop clear, toppled majestically. The Fiends slit its belly, and now Carcolo had only five Juggers left.

"Back!" he cried. "Disengage!"

Up Barch Spike toiled his troops, the battle-front a roaring seethe of scales, armor, flickering metal. Luckily for Carcolo his rear was to the high ground, and after ten terrible minutes he was able to establish an orderly retreat.

Two more Juggers had fallen. The three remaining scrambled free. Seizing boulders, they hurled them down into the attackers, who, after a series of sallies and lunges, were well content to break clear. In any event Joaz, after hearing Carcolo's news, was of no disposition to spend further troops.

Carcolo, waving his sword in desperate defiance, led his troops back around Barch Spike, presently down across the dreary Skanse. Joaz turned back to Banbeck Vale. The news of the Basic raid had spread to all ears. The men rode sober and quiet, looking behind and overhead. Even the dragons seemed infected, and muttered restlessly among themselves.

As they crossed Blue Fell the almost omnipresent wind died. The stillness added to the oppression.

Termagants, like the men, began to watch the sky. Joaz wondered, how could they know, how could they sense the Basics? He himself searched the sky, and as his army passed down over the scarp he thought to see high over Mount Gethron, a flitting little black rectangle, which presently disappeared behind a crag.

IX

ERVIS Carcolo and the remnants of his army raced pell-mell down from the Skanse, through the wilderness of ravines and gulches at the base of Mount Despoire, out on the barrens to the west of Happy Valley. All pretense of military precision had been abandoned.

Carcolo led the way, his Spider sobbing with fatigue. Behind in disarray pounded first Murderers and Blue Horrors, with Termagants hurrying along behind. Then the Fiends, racing low to the

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ground, steel balls grinding on rocks, sending up sparks. Far in the rear lumbered the Juggers and their attendants.

Down to the verge of Happy Valley plunged the army and pulled up short, stamping and squealing. Carcolo jumped from his Spider, ran to the brink, stood looking down into the valley.

He had expected to see the ship, yet the actuality of the thing was so immediate and intense as to shock him. It was a tapered cylinder, glossy and black, resting in a field of legumes not far from ramshackle Happy Town. Polished metal disks at either end shimmered and glistened with fleeting films of color. There were three entrance ports — forward, central and aft — and from the central port a ramp had been extended to the ground.

The Basics had worked with ferocious efficiency. From the town straggled a line of people, herded by Heavy Troopers. Approaching the ship they passed through an inspection apparatus controlled by a pair of Basics. A series of instruments and the eyes of the Basics appraised each man, woman and child, classified them by some system not instantly obvious, whereupon the captives were either hustled up the ramp into the ship or prodded into a nearby booth.

Peculiarly, no matter how many persons entered, the booth never seemed to fill.

Carcolo rubbed his forehead with trembling fingers, turned his eyes to the ground. When once more he looked up, Bast Givven stood beside him, and together they stared down into the valley.

From behind came a cry of alarm. Starting around, Carcolo saw a black rectangular flyer sliding silently down from above Mount Gethron.

Waving his arms Carcolo ran for the rocks, bellowing orders to take cover. Dragons and men scuttled up the gulch. Overhead slid the flyer. A hatch opened, releasing a load of explosive pellets. They struck with a great rattling volley, and up into the air flew pebbles, rock splinters, fragments of bone, scales, skin and flesh. All who failed to reach cover were shredded.

The Termagants fared relatively well. The Fiends, though battered and scraped, had all survived. Two of the Juggers had been blinded, and could fight no more till they had grown new eyes.

The flyer slid back once more. Several of the men fired their muskets — an act of apparently futile defiance, but the flyer was struck and damaged. It twisted, veered, soared up in a roaring curve, swooped over its back,

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plunged toward the mountainside, crashed in a brilliant orange gush of fire. Carcolo shouted in maniac glee, jumped up and down, ran to the verge of the cliff, shook his fist at the ship below. He quickly quieted, to stand glum and shivering.

Then, turning to the ragged cluster of men and dragons who once more had crept down from the gulch. Carcolo cried hoarsely, "What do you say? Shall we fight? Shall we charge down upon them?"

THERE was silence.

Bast Givven replied in a colorless voice, "We are helpless. We can accomplish nothing. Why commit suicide?"

Carcolo turned away, heart too full for words. Givven spoke the obvious truth. They would either be killed or dragged aboard the ship; and then, on a world too strange for imagining, be put to uses too dismal to be borne.

Carcolo clenched his fists and looked westward with bitter hatred. "Joaz Banbeck, you brought me to this! When I might yet have fought for my people you detained me!"

"The Basics were here already," said Givven with unwelcome rationality. "We could have done nothing since we had nothing to do with."

"We could have fought!" bellowed Carcolo. "We might have swept down the Crotch and come upon them with all force! A hundred warriors and four hundred dragons — are these to be despised?"

Bast Givven judged further argument to be pointless. He pointed. "They now examine our brooders."

Carcolo turned to look, gave a wild laugh. "They are astonished! They are awed! And well have they a right to be."

Givven agreed. "I imagine the sight of a Fiend or a Blue Horror — not to mention a Jugger — gives them pause for reflection."

Down in the valley the grim business had ended. The Heavy Troopers marched back into the ship. A pair of enormous men twelve feet high came forth, lifted the booth, carried it up the ramp into the ship. Carcolo and his men watched with protruding eyes. "Giants!"

Bast Givven chuckled dryly. "The Basics stare at our Juggers, we ponder their Giants."

The Basics presently returned to the ship. The ramp was drawn up, the ports closed. From a turret in the bow came a shaft of energy, touching each of the three brooders in succession, and each exploded with great eruption of black bricks.

Carcolo moaned softly under

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his breath, but said nothing.

The ship trembled, floated. Carcolo bellowed an order; men and dragons rushed for cover. Flattened behind boulders they watched the black cylinder rise from the valley, drift to the west. "They make for Banbeck Vale," said Bast Givven.

Carcolo laughed, a cackle of mirthless glee. Bast Givven looked at him sidelong. Had Ervis Carcolo become addled? He turned away. A matter of no great moment.

Carcolo came to a sudden resolve. He stalked to one of the Spiders, mounted, swung around to face his men. "I ride to Banbeck Vale. Joaz Banbeck has done his best to despoil me; I shall do my best against him. I give no orders: come or stay as you wish. Only remember! Joaz Banbeck would not allow us to fight the Basics!"

He rode off. The men stared into the plundered valley, turned to look after Carcolo. The black ship was just now slipping over Mount Despoire. There was nothing for them in the valley. Grumbling and muttering, they summoned the bone-tired dragons and set off up the dreary mountainside.

ERVIS Carcolo rode his Spider at a plunging run across the Skanse. Tremendous crags soared to either side, the blazing sun hung halfway up the black sky. Behind, the Skanse Ramparts; ahead, Barchback, Barch Spike and Northguard Ridge.

Oblivious to the fatigue of his Spider, Carcolo whipped it on. Gray-green moss pounded back from its wild feet, the narrow head hung low, foam trailed from its gill-vents. Carcolo cared nothing. His mind was empty of all but hate — for the Basics, for Joaz Banbeck, for Aerlith, for man, for human history.

Approaching Northguard the Spider staggered and fell. It lay moaning, neck outstretched, legs trailing back. Carcolo dismounted in disgust. He looked back down the long rolling slope of the Skanse to see how many of his troops had followed him. A man riding a Spider at a modest lope turned out to be Bast Givven, who presently came up beside him and inspected the fallen Spider. "Loosen the surcingle. He will recover the sooner." Carcolo glared, thinking to hear a new note in Givven's voice. Nevertheless he bent over the foundered dragon and slipped loose the broad bronze buckle. Givven dismounted, stretched his arms, massaged his thin legs. He pointed. "The Basic ship descends into Banbeck Vale."

Carcolo nodded grimly. "I would be an audience to the land-

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ing." He kicked the Spider. "Come, get up, have you not rested enough? Do you wish me to walk?"

The Spider whimpered its fatigue, but nevertheless struggled to its feet. Carcolo started to mount, but Bast Givven laid a restraining hand on his shoulder. Carcolo looked back in outrage: here was impertinence! Givven said calmly, "Tighten the surcingle, otherwise you will fall on the rocks and once more break your bones."

Uttering a spiteful phrase under his breath, Carcolo clasped the buckle back into position. The Spider cried out in despair. Paying no heed, Carcolo mounted, and the Spider moved off with trembling steps.

Barch Spike rose ahead like the prow of a white ship, dividing Northguard Ridge from Barchback. Carcolo paused to consider the landscape, tugging his mustaches.

GIVVEN was tactfully silent. Carcolo looked back down the Skanse to the listless straggle of his army, then set off to the left.

Passing close under Mount Gethron, skirting the High Jambles, they descended an ancient water-course to Banbeck Verge. Though perforce they had come without great speed, the Basic ship had moved no faster. It had only started to settle into the vale, the disks at bow and stern swirling with furious colors.

Carcolo grunted bitterly. "Trust Joaz Banbeck to scratch his own itch. Not a soul in sight! He's taken to his tunnels, dragons and all." Pursing his mouth he rendered a mincing parody of Joaz's voice: " 'Ervis Carcolo, my dear friend, there is but one answer to attack: dig tunnels!' And I replied to him, 'Am I a sacerdote to live underground? Burrow and delve, Joaz Banbeck, do as you will. I am but an old-time man; I go under the cliffs only when I must.' "

Givven gave the faintest of shrugs.

Carcolo went on, "Tunnels or not, they'll winkle him out. If need be they'll blast open the entire valley. They've no lack of tricks."

Givven grinned sardonically. "Joaz Banbeck knows a trick or two—as we know to our sorrow."

"Let him capture two dozen Basics today," snapped Carcolo. "Then I'll concede him a clever man." He stalked away to the very brink of the cliff, standing in full view of the Basic ship. Givven watched without expression.

Carcolo pointed. "Aha! Look there!"

"Not I," said Givven. "I re-

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spect the Basic weapons too greatly."

"Pah!" spat Carcolo. Nevertheless he moved a trifle back from the brink. "There are dragons in Kergan's Way. For all Joaz Banbeck's talk of tunnels." He gazed north along the valley a moment or two, then threw up his hands in frustration. "Joaz Banbeck will not come up here to me. There is nothing I can do. Unless I walk down into the village, seek him out and strike him down, he will escape me."

"Unless the Basics captured the two of you and confined you in the same pen," said Givven.

"Bah!" muttered Carcolo, and moved off to one side.

X

THE vision-plates which allowed Joaz Banbeck to observe the length and breadth of Banbeck Vale for the first time were being put to practical use.

He had evolved the scheme while playing with a set of old lenses, and dismissed it as quickly. Then one day, while trading with the sacerdotes in the cavern under Mount Gethron, he had proposed that they design and supply the optics for such a system.

The blind old sacerdote who conducted the trading gave an ambiguous reply. The possibility of such a project, under certain circumstances, might well deserve consideration. Three months passed. The scheme receded to the back of Joaz Banbeck's mind. Then the sacerdote in the trading-cave inquired if Joaz still planned to install the viewing system. If so he might take immediate delivery of the optics.

Joaz agreed to the barter price, returned to Banbeck Vale with four heavy crates. He ordered the necessary tunnels driven, installed the lenses, and found that with the study darkened he could command all quarters of Banbeck Vale.

Now, with the Basic ship darkening the sky, Joaz Banbeck stood in his study, watching the descent of the great black hulk.

At the back of the chamber maroon portieres parted. Clutching the cloth with taut fingers stood the minstrel-maiden Phade. Her face was pale, her eyes bright as opals. In a husky voice she called, "The ship of death. It has come to gather souls!"

Joaz turned her a stony glance and turned back to the honed-glass screen. "The ship is clearly visible."

Phade ran forward, clasped Joaz's arm, swung around to look into his face. "Let us try to escape into the High Jambles. Don't let them take us so soon!"

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"No one deters you," said Joaz indifferently. "Escape in any direction you choose."

Phade stared at him blankly, then turned her head and watched the screen. The great black ship sank with sinister deliberation, the disks at bow and stern now shimmering mother-of-pearl. Phade looked back to Joaz, licked her lips. "Are you not afraid?"

Joaz smiled thinly. "What good to run? Their Trackers are swifter than Murderers, more vicious than Termagants. They can smell you a mile away, take you from the very center of the Jambles."

Phade shivered with superstitious horror. She whispered, "Let them take me dead, then. I can't go with them alive."

Joaz suddenly cursed. "Look where they land! In our best field of bellegarde!"

"What is the difference?

" 'Difference'? Must we stop eating because they pay their visit?"

PHADE looked at him in a daze, beyond comprehension. She sank slowly to her knees and began to perform the ritual gestures of the Theurgic cult. Hands palm down to either side, slowly up till the back of the hand touched the ears, and the simultaneous protrusion of the tongue; over and over again, eyes staring with hypnotic intensity into emptiness.

Joaz ignored the gesticulations, until Phade, her face screwed up into a fantastic mask, began to sigh and whimper. Then he swung the flaps of his jacket into her face. "Give over your folly!"

Phade collapsed moaning to the floor. Joaz's lips twitched in annoyance. Impatiently he hoisted her erect. "Look you, these Basics are neither ghouls nor angels of death. They are no more than pallid Termagants, the basic stock of our dragons. So now, give over your idiocy, or I'll have Rife take you away."

"Why do you not make ready? You watch and do nothing."

"There is nothing more that I can do."

Phade drew a deep shuddering sigh, stared dully at the screen. "Will you fight them?"

"Naturally."

"How can you hope to counter such miraculous power?"

"We will do what we can. They have not yet met our dragons."

The ship came to rest in a purple and green vine-field across the valley, near the mouth of Clybourne Crevasse. The port slid back and a ramp rolled forth. "Look," said Joaz, "there you see them."

Phade stared at the queer pale

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shapes who had come tentatively out on the ramp. "They seem strange and twisted, like silver puzzles for children."

"They are the Basics. From their eggs came our dragons. They have done as well with men: look, here are their Heavy Troops."

Down the ramp, four abreast, in exact cadence, marched the Heavy Troops, to halt fifty yards in front of the ship. There were three squads of twenty: short squat men with massive shoulders, thick necks and stern, downdrawn faces. They wore armor fashioned from overlapping scales of black and blue metal, a wide belt slung with pistol and sword. Black epaulets, extending past their shoulders, supported a short ceremonial flap of black cloth ranging down their backs. Their helmets bore a crest of sharp spikes. Their knee-high boots were armed with kick-knives.

A number of Basics now rode forth. Their mounts were creatures only remotely resembling men. They ran on hands and feet, backs high off the ground. Their heads were long and hairless, with quivering loose lips. The Basics controlled them with negligent touches of a quirt, and once on the ground set them cantering smartly through the bellegarde. Meanwhile a team of Heavy Troopers rolled a three-wheeled mechanism down the ramp, directed its complex snout toward the village.

"Never before have they prepared so carefully," muttered Joaz. "Here come the Trackers." He counted. "Only two dozen? Perhaps they are hard to breed. Generations pass slowly with men; dragons lay a clutch of eggs every year . . ."

THE Trackers moved to the side and stood in a loose restless group: gaunt creatures seven feet tall, with bulging black eyes, beaked noses, small undershot mouths pursed as if for kissing. From narrow shoulders long arms dangled and swung like ropes. As they waited they flexed their knees, staring sharply up and down the valley, in constant restless motion. After them came a group of Weaponeers — unmodified men wearing loose cloth smocks and cloth hats of green and yellow. They brought with them two more three-wheeled contrivances which they at once began to adjust and test.

The entire group became still and tense.

The Heavy Troopers stepped forward with a stumping, heavy-legged gait, hands ready at pistols and swords. "Here they come," said Joaz. Phade made a quiet desperate sound, knelt and

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once more began to perform Theurgic gesticulations. Joaz in disgust ordered her from the study. He went to a panel equipped with a bank of six direct-wire communications, the construction of which he had personally supervised. He spoke into three of the telephones, assuring himself that his defenses were alert, then returned the honed glass screens.

Across the field of bellegarde came the Heavy Troopers, faces heavy, hard, marked with downveering creases. Upon either flank the Weaponeers trundled their three-wheeled mechanisms, but the Trackers waited beside the ship. About a dozen Basics rode behind the Heavy Troopers, carrying bulbous weapons on their backs.

A hundred yards from the portal into Kergan's Way, beyond the range of the Banbeck muskets, the invaders halted. A Heavy Trooper ran to one of the Weaponeers' carts, thrust his shoulders under a harness and stood erect. He now carried a gray machine, from which extended a pair of black globes. The Trooper scuttled toward the village like an enormous rat, while from the black globes streamed a flux, intended to interfere with the neural currents of the Banbeck defenders, and so immobilize them.

Explosions sounded. Puffs of smoke appeared from nooks and vantages through the crags. Bullets spat into the ground beside the Trooper. Several caromed off his armor.

At once heat-beams from the ship stabbed against the cliff walls. In his study Joaz Banbeck smiled. The smoke puffs were decoys. The actual shots came from other areas. The Trooper, dodging and jerking, avoided a rain of bullets and ran under the portal, above which two men waited. Affected by the flux, they tottered, stiffened, but nevertheless dropped a great stone which struck the Trooper where the neck joined his shoulders and hurled him to the ground.

He thrashed his arms and legs up and down, rolled over and over. Then, bouncing to his feet, he raced back into the valley, soaring and bounding, finally to stumble, plunge headlong to the ground and lay kicking and quivering.

The Basic army watched with no apparent concern or interest.

THERE was a moment of inactivity. Then from the ship came an invisible field of vibration, traveling across the face of the cliff.

Where the focus struck, puffs of dust arose and loose rock be-

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came dislodged. A man, lying on a ledge, sprang to his feet, dancing and twisting, plunged two hundred feet to his death. Passing across one of Joaz Banbeck's spy-holes, the vibration was carried into the study where it set up a nerve-grinding howl. The vibration passed along the cliff. Joaz rubbed his aching head.

Meanwhile the Weaponeers discharged one of their instruments. First there came a muffled explosion, then through the air curved a wobbling gray sphere. Inaccurately aimed, it struck the cliff and burst in a great gush of yellow-white gas. The mechanism exploded once more, and this time lobbed the bomb accurately into Kergan's Way — which was now deserted. The bomb produced no effect.

In his study Joaz waited grimly. To now the Basics had taken only tentative, almost playful, steps. More serious efforts would surely follow.

Wind dispersed the gas; the situation remained as before. The casualties so far had been one Heavy Trooper and one Banbeck rifleman.

From the ship now came a stab of red flame, harsh, decisive. The rock at the portal shattered. Slivers sang and spun; the Heavy Troopers jogged forward.

Joaz spoke into his telephone, bidding his captains caution, lest in counter-attacking against a feint they expose themselves to a new gas bomb.

But the Heavy Troopers stormed into Kergan's Way — in Joaz's mind an act of contemptuous recklessness. He gave a curt order.

Out from passages and areas swarmed his dragons: Blue Horrors, Fiends, Termagants.

The squat Troopers stared with sagging jaws. Here were unexpected antagonists! Kergan's Way resounded with their calls and orders. First they fell back, then, with the courage of desperation, fought furiously. Up and down Kergan's Way raged the battle.

Certain relationships quickly became evident. In the narrow defile neither the Trooper pistols nor the steel-weighted tails of the Fiends could be used effectively. Cutlasses were useless against dragon-scale, but the pincers of the Blue Horrors, the Termagant daggers, the axes, swords, fangs and claws of the Fiends, did bloody work against the Heavy Troopers. A single Trooper and a single Termagant were approximately a match; though the Trooper, gripping the dragon with massive arms, tearing away its brachs, breaking back its neck, won more often than the Termagant. But if two or three Termagants confronted a single Troop-

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er, he was doomed. As soon as he committed himself to one, another would crush his legs, blind him or hack open his throat.

So the Troopers fell back to the valley floor, leaving twenty of their fellows dead in Kergan's Way. The Banbeck men once more opened fire, but once more with minor effect.

JOAZ watched from his study, wondering as to the next Basic tactic. Enlightenment was not long in coming. The Heavy Troopers regrouped and stood panting, while the Basics rode back and forth receiving information, admonishing, advising, chiding.

From the black ship came a gush of energy, to strike the cliff above Kergan's Way. The study rocked with the concussion.

Joaz backed away from the vision-plates. What if a ray struck one of his collecting lenses? Might not the energy be guided and reflected directly toward him?

He departed his study as it shook to a new explosion.

He ran through a passage, descended a staircase, emerged into one of the central galleries, to find apparent confusion. White-faced women and children, retiring deeper into the mountain, pushed past dragons and men in battle-gear entering one of the new tunnels. Joaz watched for a moment or two to satisfy himself that the confusion held no panic, then joined his warriors in the tunnel leading north.

In some past era an entire section of the cliff at the head of the valley had sloughed off, creating a jungle of piled rock and boulders: the Banbeck Jambles. Here, through a fissure, the new tunnel opened; and here Joaz went with his warriors. Behind them, down the valley, sounded the rumble of explosions as the black ship began to demolish Banbeck Village.

Joaz, peering around a boulder, watched in a fury, as great slabs of rock began to scale away from the cliff.

Then he stared in astonishment, for to the Basic troops had come an extraordinary reinforcement: eight Giants twice an ordinary man's stature — barrel-chested monsters, gnarled of arm and legs, with pale eyes, shocks of tawny hair. They wore brown and red armor with black epaulettes, and carried swords, maces and blast-cannon slung over their backs.

Joaz considered. The presence of the Giants gave him no reason to alter his central strategy, which in any event was vague and intuitive. He must be prepared to suffer losses, and could only hope to inflict greater losses

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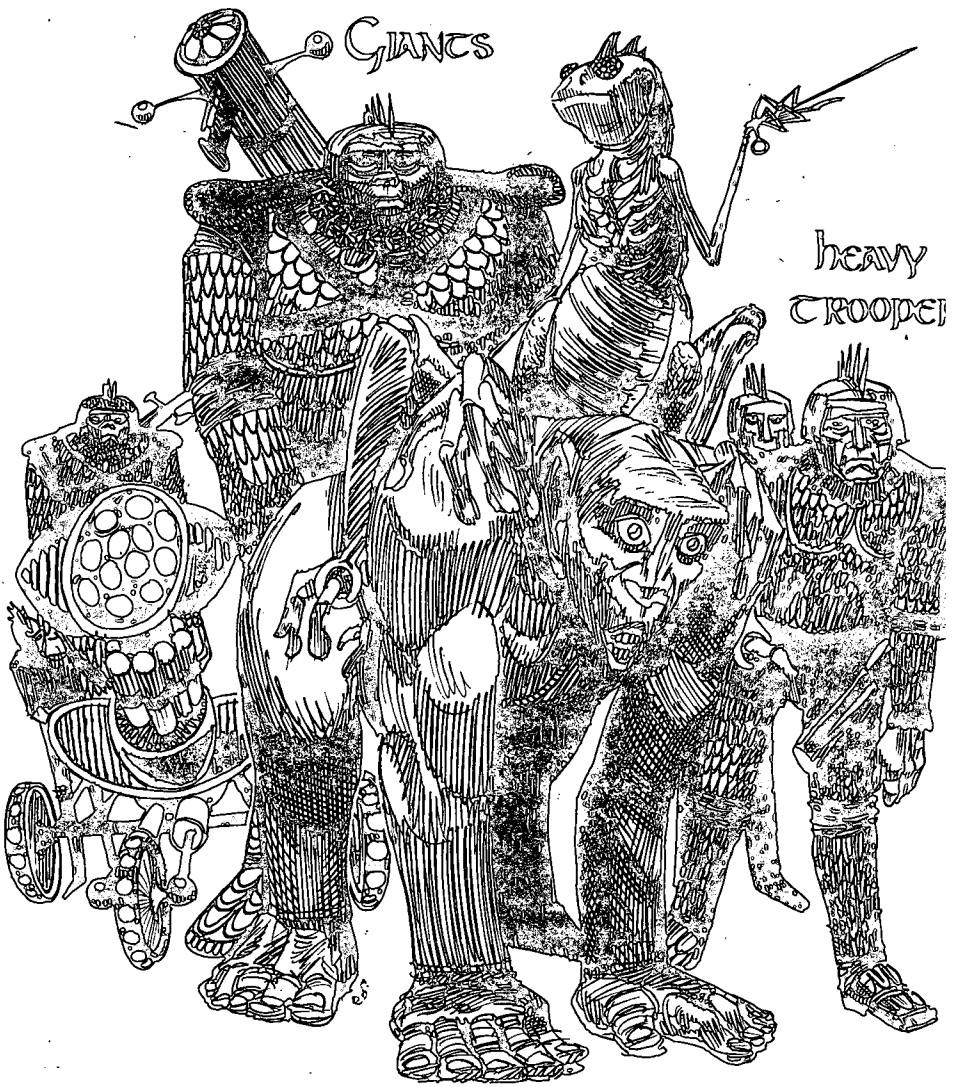

Basic on mount

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on the Basics. But what did they care for the lives of their troops? Less than he cared for his dragons. And if they destroyed Banbeck Village, ruined the Vale, how could he do corresponding damage to them?

He looked over his shoulder at the tall white cliffs, wondering how closely he had estimated the position of the sacerdote's hall. And now he must act; the time had come.

He signaled to a small boy, one of his own sons, who took a deep breath, hurled himself blindly away from the shelter of the rocks, ran helter-skelter out to the valley floor. A moment later his mother ran forth to snatch him up and dash back into the Jambles.

"Done well," Joaz commended them. "Done well indeed." Cautiously he again looked forth through the rocks. The Basics were gazing intently in his direction.

FOR a long moment, while Joaz tingled with suspense, it seemed that they had ignored his ploy. They conferred, came to a decision, flicked the leathery buttocks of their mounts with their quirts. The creatures pranced sidewise, then loped north up the valley. The Trackers fell in behind, then came the Heavy Troopers moving at a humping quick-step. The Weaponeers followed with their three-wheeled mechanisms, and ponderously at the rear came the eight Giants.

Across the fields of bellegarde and vetch, over vines, hedges, beds of berries and stands of oilpod tramped the raiders, destroying with a certain morose satisfaction.

The Basics prudently halted before the Banbeck Jambles, while the Trackers ran ahead like dogs, clambering over the first boulders, rearing high to test the air for odor, peering, listening, pointing, twittering doubtfully to each other. The Heavy Troopers moved in carefully, and their near presence spurred on the Trackers.

Abandoning caution, they bounded into the heart of the Jambles, emitting squeals of horrified consternation when a dozen Blue Horrors dropped among them. They clawed out heat-guns, in their excitement burning friend and foe alike. With silken ferocity the Blue Horrors ripped them apart. Screaming for aid, kicking, flailing, thrashing, those who were able fled as precipitously as they had come.

Only twelve from the original twenty-four regained the valley floor; and even as they did so, even as they cried out in relief at winning free from death, a squad of Long-horned Murderers burst

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out upon them, and these surviving Trackers were knocked down, gored, hacked.

The Heavy Troopers charged forward with hoarse calls of rage, aiming pistols, swinging swords; but the Murderers retreated to the shelter of the boulders.

Within the Jambles the Banbeck men had appropriated the heat-guns dropped by the Trackers. Warily coming forward, they tried to burn the Basics. But, unfamiliar with the weapons, the men neglected either to focus or condense the flame. The Basics were no more than mildly singed. Hastily they whipped their mounts back out of range. The Heavy Troopers, halting not a hundred feet in front of the Jambles, sent in a volley of explosive pellets, which killed two of the Banbeck knights and forced the others back.

XI

AT A discreet distance the Basics appraised the situation. The Weaponeers came up and, while awaiting instructions, conferred in low tones with the mounts.

One of these Weaponeers was now summoned and given orders. He divested himself of all his weapons and holding his empty hands in the air marched forward to the edge of the Jambles. Choosing a gap between a pair of ten-foot boulders, he resolutely entered the rock-maze.

A Banbeck knight escorted him to Joaz. Here, by chance, were also half a dozen Termagants. The Weaponeer paused uncertainly, made a mental readjustment, approached the Termagants. Bowing respectfully he started to speak. The Termagants listened without interest, and presently one of the knights directed him to Joaz.

"Dragons do not rule men on Aerlith," said Joaz dryly. "What is your message?"

The Weaponeer looked dubiously toward the Termagants, then somberly back to Joaz. "You are authorized to act for the entire warren?" He spoke slowly in a dry bland voice, selecting his words with conscientious care.

Joaz repeated shortly, "What is your message?"

"I bring an integration from my masters."

" 'Integration'? I do not understand you."

"An integration of the instantaneous vectors of destiny. An interpretation of the future. They wish the sense conveyed to you in the following terms: 'Do not waste lives, both ours and your own. You are valuable to us and will be given treatment in accordance with this value.

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Surrender to the Rule. Cease the wasteful destruction of enterprise.' "

Joaz frowned. "Destruction of 'enterprise'?"

"The reference is to the content of your genes. The message is at its end. I advise you to accede. Why waste your blood, why destroy yourselves? Come forth now with me. All will be for the best."

Joaz gave a brittle laugh. "You are a slave. How can you judge what is best for us?"

The Weaponeer blinked. "What choice is there for you? All residual pockets of disorganized life are to be expunged. The way of facility is best." He inclined his head respectfully toward the Termagants. "If you doubt me, consult your own Revered Ones. They will advise you."

"There are no Revered Ones here," said Joaz. "The dragons fight with us and for us; they are our fellow-warriors. But I have an alternate proposal. Why do not you and your fellows join us? Throw off your slavery, become free men! We will take the ship and go searching for the old worlds of men."

The Weaponeer exhibited only polite interest. " 'Worlds of men'? There are none of them. A few residuals such as yourself remain in the desolate regions. All are to be expunged. Would you not prefer to serve the Rule?"

"Would you not prefer to be a free man?"

The Weaponeer's face showed mild bewilderment. "You do not understand me. If you choose—"

"Listen carefully," said Joaz. "You and your fellows can be your own masters, live among other men."

The Weaponeer frowned. "Who would wish to be a wild savage? To whom would we look for law, control, direction, order?"

JOAZ threw up his hands in disgust, but made one last attempt. "I will provide all these; I will undertake such a responsibility. Go back, kill all the Basics — the Revered Ones, as you call them. These are my first orders."

"Kill them?" The Weaponeer's voice was soft with horror.

"Kill them." Joaz spoke as if to a child. "Then we men will possess the ship. We will go to find the worlds where men are powerful —"

"There are no such worlds."

"Ah, but there must be! At one time men roamed every star in the sky."

"No longer."

"What of Eden?"

"I know nothing of it."

Joaz threw up his hands. "Will you join us?"

"What would be the meaning

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of such an act?" said the Weaponeer gently. "Come then. Lay down your arms, submit to the Rule." He glanced doubtfully toward the Termagants. "Your own Revered Ones will receive fitting treatment. Have no fear on this account."

"You fool! These 'Revered Ones' are slaves, just as you are a slave to the Basics! We breed them to serve us, just as you are bred! Have at least the grace to recognize your own degradation!"

The Weaponeer blinked. "You speak in terms I do not completely understand. You will not surrender then?"

"No. We will kill all of you, if our strength holds out."

The Weaponeer bowed, turned, departed through the rocks. Joaz followed, peered out over the valley floor.

The Weaponeer made his report to the Basics, who listened with characteristic detachment. They gave an order, and the Heavy Troopers, spreading out in a skirmish line, moved slowly in toward the rocks.

Behind lumbered the Giants, blasters slung forward at the ready, and about twenty Trackers, survivors of the first foray. The Heavy Troopers reached the rocks, peered in. The Trackers clambered above, searching for ambushes, and finding none, signaled back. With great caution the Heavy Troopers entered the Jambles, necessarily breaking formation. Twenty feet they advanced, fifty feet, a hundred feet. Emboldened, the vengeful Trackers sprang forward over the rocks . . . and up surged the Termagants.

Screaming and cursing the Trackers scrambled back, pursued by the dragons. The Heavy Troopers recoiled, then swung up their weapons, fired. Two Termagants were struck under the lower armpits, their most vulnerable spot. Floundering, they tumbled down among the rocks. Others, maddened, jumped squarely down upon the Troopers. There was roaring, squealing, cries of shock and pain. The Giants lumbered up, and grinning vastly plucked away the Termagants, wrenched off their heads, flung them high over the rocks. Those Termagants who were able scuttled back, leaving half a dozen Heavy Troopers wounded, two with their throats torn open.

AGAIN the Heavy Troopers moved forward, with the Trackers reconnoitering above, but more warily. The Trackers froze, yelled a warning. The Heavy Troopers stopped short, calling to each other, swinging their guns nervously. Overhead the Trackers scrambled back,

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and through the rocks, over the rocks, came dozens of Fiends and Blue Horrors.

The Heavy Troopers, grimacing dourly, fired their pistols; and the air reeked with the stench of burning scale, exploded viscera. The dragons surged in upon the men, and now began a terrible battle among the rocks, with the pistols, the maces, even the swords useless for lack of room.

The Giants lumbered forward and in turn were attacked by Fiends. Astonished, the idiotic grins faded from their faces; they hopped awkwardly back from the steel-weighted tails, but among the rocks the Fiends were also at a disadvantage, their steel balls clattering and jarring away from rock more often than flesh.

The Giants, recovering, discharged their chest-projectors into the melée. Fiends were torn apart as well as Blue Horrors and Heavy Troopers, the Giants making no distinction.

Over the rocks came another wave of dragons: Blue Horrors. They slid down on the heads of the Giants, clawing, stabbing, tearing. In a frenzy the Giants tore at the creatures, flung them to the ground, stamped on them, and the Heavy Troopers burnt them with their pistols.

From nowhere, for no reason, there came a lull.

Ten seconds, fifteen seconds passed, with no sound but whimpering and moaning from wounded dragons and men. A sense of imminence weighted the air, and here came the Juggers, looming through the passages.

For a brief period Giants and Juggers looked each other face to face. Then Giants groped for their blast-projectors, while Blue Horrors sprang down once more, grappling the Giant arms. The Juggers stumped quickly forward. Dragon-brachs grappled Giant arms; bludgeons and maces swung, dragon armor and man armor crushed and ground apart. Man and dragon tumbled over and over, ignoring pain, shock, mutilation.

The struggle became quiet. Sobbing and wheezing replaced the roars, and presently eight Juggers, superior in mass and natural armament, staggered away from eight destroyed Giants.

The Troopers meanwhile had drawn together, standing back to back in clots. Step by step, burning with heat-beams the screaming Horrors, Termagants and Fiends who lunged after them, they retreated toward the valley floor, and finally won free of the rocks. The pursuing Fiends, anxious to fight in the open, sprang into their midst, while from the flanks came Long-horned Murderers and Striding Murderers. In a spirit of reckless jubilation,

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a dozen men riding Spiders, carrying blast-cannon taken from the fallen Giants, charged the Basics and Weaponeers, who waited beside the rather casual emplacement of three-wheeled weapons. The Basics, without shame, jerked their man-mounts around and fled toward the black ship.

The Weaponeers swiveled their mechanisms, aimed, discharged bursts of energy. One man fell, two men, three men — then the others were among the Weaponeers, who were soon hacked to pieces . . . including the persuasive individual who had served as envoy.

Several of the men, whooping and hooting, set out in chase of the Basics. But the human mounts, springing along like monstrous rabbits, carried the Basics as fast as the Spiders carried the men.

From the Jambles came a horn signal. The mounted men halted, wheeled back; the entire Banbeck force turned and retreated full speed into the Jambles.

The Troopers stumbled a few defiant steps in pursuit, then halted in sheer fatigue.

Of the original three squads, not enough men to make up a single squad survived. The eight Giants had perished, all Weaponeers and almost the entire group of Trackers.

The Banbeck forces gained the Jambles with seconds only to spare. From the black ship came a volley of explosive pellets, to shatter the rocks at the spot where they had disappeared.

ON A wind-polished cape of rock above Banbeck Vale Ervis Carcolo and Bast Givven had watched the battle.

The rocks hid the greater part of the fighting. The cries and clangor rose faint and tinny, like insect noise. There would be the glint of dragon scale, glimpses of running men, the shadow and flicker of movement, but not until the mangled forces of the Basics staggered forth did the outcome of the battle reveal itself. Carcolo shook his head in sour bewilderment. "The crafty devil, Joaz Banbeck! He's turned them back. He's slaughtered their best!"

"It would appear," said Bast Givven, "that dragons armed with fangs, swords and steel balls are more effective than men with guns and heat-beams — at least in close quarters."

Carcolo grunted. "I might have done as well myself, under like circumstances." He turned Bast Givven a waspish glance.

"Do you not agree?"

"Certainly. Beyond question."

"Of course," Carcolo went on, "I had not the advantage of pre-

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paration. The Basics surprised me, but Joaz Banbeck labored under no such handicap." He looked back down into Banbeck Vale, where the Basic ship was bombarding the Jambles, shattering rocks into splinters. "Do they plan to blast the Jambles out of the valley? In which case, of course, Joaz Banbeck would have no further refuge. Their strategy is clear. And as I suspected: reserve forces!"

Another thirty Troopers had marched down the ramp to stand immobile in the trampled field before the ship.

Carcolo pounded his fist into his palm. "Bast Givven, listen now, listen carefully! For it is in our power to do a great deed, to reserve our fortunes! Notice Clybourne Crevasse, how it opens into the Vale, directly behind the Basic ship."

"Your ambition will yet cost us our lives."

Carcolo laughed. "Come, Givven, how many times does a man die? What better way to lose a life than in the pursuit of glory?"

Bast Givven turned, surveyed the meager remnants of the Happy Valley army. "We could win glory by trouncing a dozen sacerdotes. Flinging ourselves upon a Basic ship is hardly needful."

"Nevertheless," said Ervis Carcolo, "that is how it must be. I ride ahead, you marshal the forces and follow. We meet at the head of Clybourne Crevasse, on the west edge of the Vale!"

XII

STAMPING his feet, muttering nervous curses, Ervis Carcolo waited at the head of Clybourne Crevasse.

Unlucky chance after chance paraded before his imagination. The Basics might surrender to the difficulties of Banbeck Vale and depart. Joaz Banbeck might attack across the open fields to save Banbeck Village from destruction and so destroy himself. Bast Givven might be unable to control the disheartened men and mutinous dragons of Happy Valley. Any of these situations might occur; any would expunge Carcolo's dreams of glory and leave him a broken man.

Back and forth he paced the scarred granite. Every few seconds he peered down into Banbeck Vale. Every few seconds he turned to scan the bleak skylines for the dark shapes of his dragons, the taller silhouettes of his men.

Beside the Basic ship waited a scanty two squads of Heavy Troopers: those who had survived the original attack and the reserves. They squatted in silent groups, watching the leisurely destruction of Banbeck Village.

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Fragment by fragment, the spires, towers and cliffs which had housed the Banbeck folk cracked off, slumped down into an ever-growing mound of rubble. An even heavier barrage poured against the Jambles. Boulders broke like eggs. Rock splinters drifted down the valley.

A half hour passed. Ervis Carcolo seated himself glumly on a rock.

A jingle, the pad of feet: Carcolo bounded to his feet. Winding across the skyline came the sorry remnants of his forces, the men dispirited, the Termagants surly and petulant, a mere handful each of Fiends, Blue Horrors and Murderers.

Carcolo's shoulders sagged. What could be accomplished with a force so futile as this? He took a deep breath. Show a brave front! Never say die! He assumed his bluffest mien. Stepping forward, he cried out, "Men, dragons! Today we have known defeat, but the day is not over. The time of redemption is at hand; we shall revenge ourselves on both the Basics and Joaz Banbeck!"

He searched the faces of his men, hoping for enthusiasm. They looked back at him without interest. The dragons, their understanding less complete, snorted softly, hissed and whispered. "Men and dragons!" bawled Carcolo. "You ask me, how shall we achieve these glories? I answer, follow where I lead! Fight where I fight! What is death to us, with our valley despoiled?"

Again he inspected his troops, once more finding only listlessness and apathy. Carcolo stifled the roar of frustration which rose into his throat, and turned away. "Advance!" he called gruffly over his shoulder. Mounting his drooping Spider, he set off down Clybourne Crevasse.

THE Basic ship pounded the Jambles and Banbeck Village with equal vehemence. From a vantage on the west rim of the valley Joaz Banbeck watched the blasting of corridor after familiar corridor. Apartments and halls hewn earnestly from the rock, carved, tooled, polished across the generations — all opened, destroyed, pulverized. Now the target became that spire which contained Joaz Banbeck's private apartments, with his study, his workroom, the Banbeck reliquarium.

Joaz clenched and unclenched his fists, furious at his own helplessness. The goal of the Basics was clear. They intended to destroy Banbeck Vale, to exterminate as completely as possible the men of Aerlith — and what could prevent them?

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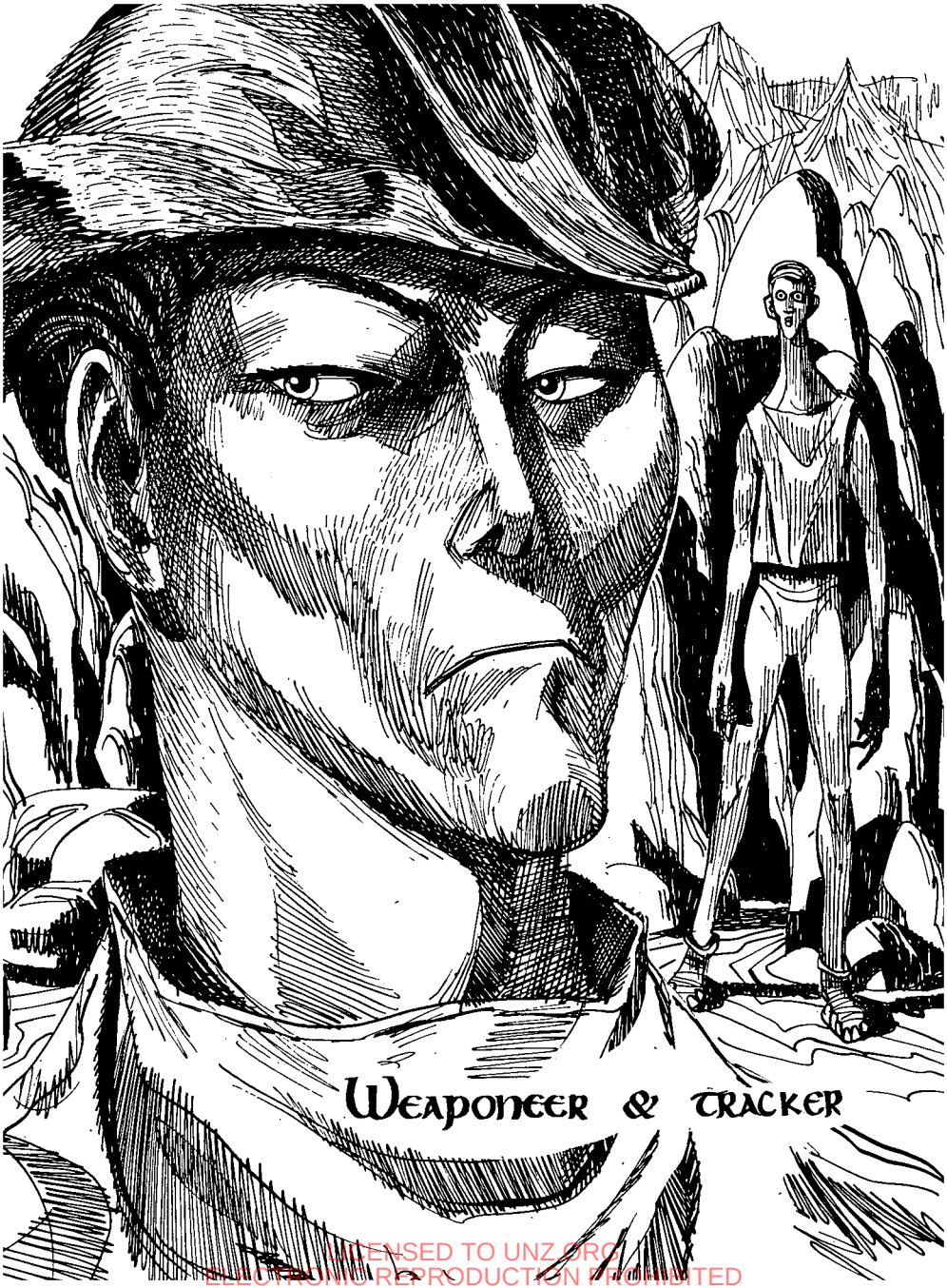

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Joaz studied the Jambles. The old talus had been splintered away almost to the sheer face of the cliff. Where was the opening into the Great Hall of the sacerdotes? His far-fetched hypotheses were diminishing to futility. Another hour would see the utter devastation of Banbeck Village.

Joaz tried to control a sickening sense of frustration. How to stop the destruction? He forced himself to calculate. Clearly, an attack across the valley floor was equivalent to suicide. But behind the black ship opened a ravine similar to that in which Joaz stood concealed: Clybourne Crevasse. The ship's entry gaped wide, Heavy Troopers squatted listlessly to the side. Joaz shook his head with a sour grimace. Inconceivable that the Basics could neglect so obvious a threat.

Still—in their arrogance might they not overlook the possibility of so insolent an act?

Indecision tugged Joaz forward and backward. And now a barrage of explosive pellets split open the spire which housed his apartments. The reliquarium, the ancient trove of the Banbeck's, was about to be destroyed . . . Joaz made a blind gesture, jumped to his feet, called the closest of his dragon-masters.

"Assemble the Murderers, three squads of Termagants, two dozen Blue Horrors, ten Fiends, all the riders. We climb to Banbeck Verge. We descend Clybourne Crevasse. We attack the ship!"

The dragon-master departed. Joaz gave himself to gloomy contemplation. If the Basics intended to draw him into a trap, they were about to succeed.

The dragon-master returned. "The force is assembled."

"We ride."

Up the ravine surged men and dragons, emerging upon Banbeck Verge. Swinging south, they came to the head of Clybourne Crevasse.

A knight at the head of the column suddenly signaled a halt. When Joaz approached he pointed out marks on the floor of the crevasse. "Dragons and men have passed here recently."

Joaz studied the tracks. "Heading down the crevasse."

"Yes."

Joaz dispatched a party of scouts who presently came galloping wildly back. "Ervis Carcolo, with men and dragons, is attacking the ship!"

Joaz wheeled his Spider and plunged headlong down the dim passage, followed by his army.

OUTCRIES and screams of battle reached their ears as they approached the mouth of the crevasse. Bursting out on the

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valley floor Joaz came upon a scene of desperate carnage, with dragon and Heavy Trooper hacking, stabbing, burning, blasting. Where was Ervis Carcolo?? Joaz recklessly rode to look into the entry port. It hung wide! Ervis Carcolo then had forced his way into the ship!

A trap? Or had he effectuated Joaz's own plan of seizing the ship? What of the Heavy Troopers? Would the Basics sacrifice forty warriors to capture a handful of men? Unreasonable — but now the Heavy Troopers were holding their own. They had formed a phalanx, they now concentrated the energy of their weapons on those dragons who yet opposed them. A trap? If so, it was sprung — unless Ervis Carcolo already had captured the ship. Joaz rose in his saddle, signaled his company. "Attack!"

The Heavy Troopers were doomed. Striding Murderers hewed from above, Long-horned Murderers thrust from below, Blue Horrors pinched, clipped, dismembered. The battle was done, but Joaz, with men and Termagants, had already charged up the ramp. From within came the hum and throb of power, and also human sounds — cries and shouts of fury.

The sheer ponderous bulk struck at Joaz. He stopped short, peered uncertainly into the ship. Behind him his men waited, muttering under their breath.

Joaz asked himself, "Am I as brave as Ervis Carcolo? What is bravery, in any case? I am completely afraid: I dare not enter, I dare not stay outside." He put aside all caution and rushed forward, followed by his men and a horde of scuttling Termagants.

Even as Joaz entered the ship he knew Ervis Carcolo had not succeeded. Above him the guns still sang and hissed. Joaz's apartments splintered apart. Another tremendous volley struck into the Jambles, laying bare the naked stone of cliff, and what was hitherto hidden: the edge of a tall opening.

Joaz, inside the ship, found himself in an ante-chamber. The inner port was closed. He sidled forward, peered through a rectangular pane into what seemed a lobby or staging chamber. Ervis Carcolo and his knights crouched against the far wall, casually guarded by about twenty Weaponeers. A group of Basics rested in an alcove to the side, relaxed, quiet, their attitude one of contemplation.

Carcolo and his men were not completely subdued. As Joaz watched Carcolo lunged furiously forward. A purple crackle of energy punished him, hurled him back against the wall.

From the alcove one of the

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Basics, staring across the inner chamber, took note of Joaz Banbeck. He flicked out with his brach, touched a rod. An alarm whistle sounded, the outer port slid shut. A trap? An emergency process? The result was the same. Joaz motioned to four men, heavily burdened. They came forward, kneeled, placed on the deck four of the blast cannon which the Giants had carried into the Jambles.

Joaz swung his arm. Cannon belched; metal creaked, melted; acrid odors permeated the room. The hole was still too small. "Again!" The cannon flamed; the inner port vanished.

Into the gap sprang Weaponeers, firing their energy guns. Purple fire cut into the Banbeck ranks. Men curled, twisted, wilted, fell with clenched fingers and contorted faces. Before the cannon could respond, red-scaled shapes scuttled forward: Termagants. Hissing and wailing, they swarmed over the Weaponeers, on into the staging chamber. In front of the alcove occupied by the Basics they stopped short, as if in astonishment. The men crowding after fell silent. Even Carcolo watched in fascination.

Basic stock confronted its derivative, each seeing in the other its caricature. The Termagants crept forward with sinister deliberation. The Basics waved their brachs, whistled, fluted. The Termagants scuttled forward, sprang into the alcove.

There was a horrid tumbling and croaking. Joaz, sickened at some elementary level, was forced to look away. The struggle was soon over.

There was silence in the alcove. Joaz turned to examine Ervis Carcolo, who stared back, rendered inarticulate by anger, humiliation, pain and fright.

FINALLY finding his voice Carcolo made an awkward gesture of menace and fury. "Be off with you," he croaked. "I claim this ship. Unless you would lie in your own blood, leave me to my conquest!"

Joaz snorted contemptuously, turned his back on Carcolo, who sucked in his breath, and with a whispered curse, lurched forward. Bast Givven seized him, drew him back. Carcolo struggled. Givven talked earnestly into his ear, and Carcolo at last relaxed, half-weeping.

Joaz meanwhile examined the chamber. The walls were blank, gray; the deck was covered with resilient black foam. There was no obvious illumination, but light was everywhere, exuding from the walls. The air chilled the skin, and smelled unpleasantly acrid: an odor which Joaz had not previously noticed. He

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coughed. His ear-drums rang.

A frightening suspicion became certainty. On heavy legs he lunged for the port, beckoning to his troops. "Outside, they poison us!" He stumbled out on the ramp, gulped fresh air. His men and Termagants followed, and then in a stumbling rush came Ervis Carcolo and his men. Under the hulk of the great ship the group stood gasping, tottering on limp legs, eyes dim and swimming.

Above them, oblivious or careless of their presence, the ship's guns sent forth another barrage. The spire housing Joaz's apartments tottered, collapsed. The Jambles were no more than a heap of rock splinters drifting into a high arched opening. Inside the opening Joaz glimpsed a dark shape, a glint, a shine, a structure — then he was distracted by an ominous sound at his back. From a port at the other end of the ship, a new force of Heavy Troopers had alighted. Three new squads of twenty men each, accompanied by a dozen Weaponeers with four of the rolling projectors.

Joaz sagged back in dismay.

He glanced along his troops. They were in no condition either to attack or defend. A single alternative remained: flight. "Make for Clybourne Crevasse," he called thickly.

Stumbling, lurching, the remnants of the two armies fled under the brow of the great black ship. Behind them Heavy Troopers swung smartly forward, but without haste.

Rounding the ship, Joaz stopped short. In the mouth of Clybourne Crevasse waited a fourth squad of Heavy Troopers, with another Weaponeer and his weapon.

JOAZ looked to right and left, up and down the valley. Which way to run, where to turn? The Jambles? They were nonexistent. Motion, slow and ponderous in the opening previously concealed by tumbled rock caught his attention. A dark object moved forth. A shutter drew back, a bright disk glittered. Almost instantly a pencil of milky blue radiance lanced at, into, through the end-disk of the Basic ship.

Within, tortured machinery whined, simultaneously up and down the scale, to inaudibility at either end. The luster of the end-disks vanished. They became gray, dull; the whisper of power and life previously pervading the ship gave way to dead quiet. The ship itself was dead, and its mass, suddenly unsupported, crushed groaning into the ground.

The Heavy Troopers gazed up in consternation at the hulk

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which had brought them to Aerlith. Joaz, taking advantage of their indecision, called, "Retreat! North — up the valley!"

The Heavy Troopers doggedly followed. The Weaponeers however cried out an order to halt. They emplaced their weapons, brought them to bear on the cavern behind the Jambles. Within the opening naked shapes moved with frantic haste. There was slow shifting of massive machinery, a change of lights and shadows, and the milky blue shaft of radiance struck forth once more. It flicked down.

Weaponeers, weapons, two-thirds of the Heavy Troopers vanished like moths in a furnace. The surviving Heavy Troopers halted, retreated uncertainly toward the ship.

In the mouth of Clybourne Crevasse waited the remaining squad of Heavy Troopers. The single Weaponeer crouched over his three-wheeled mechanism.

With fateful care he made his adjustments. Within the dark opening the naked sacerdotes worked furiously, thrusting, wedging, the strain of their sinews and hearts and minds communicating itself to every man in the valley. The shaft of milky-blue light sprang forth, but too soon: it melted the rock a hundred yards south of Clybourne Crevasse, and now from the Weaponeer's gun came a splash of orange and green flame. Seconds later the mouth of the sacerdote's cavern erupted. Rocks, bodies, fragments of metal, glass, rubber arched through the air.

The sound of the explosion reverberated through the valley. And the dark object in the cavern was destroyed, was no more than tatters and shreds of metal.

Joaz took three deep breaths, throwing off the effects of the narcotic gas by sheer power of will. He signaled to his Murderers. "Charge! Kill!"

The Murderers loped forward.

The Heavy Troopers threw themselves flat, aimed their weapons, but soon died. In the mouth of Clybourne Crevasse the final squad of Troopers charged wildly forth, to be instantly attacked by Termagants and Blue Horrors who had sidled along the face of the cliff. The Weaponeer was gored by a Murderer. There was no further resistance in the valley, and the ship lay open to attack.

Joaz led the way back up the ramp, through the entry into the now dim staging-chamber. The blast-cannon captured from the Giants lay where his men had dropped them.

Three portals led from the chamber, and these were swiftly burned down. The first revealed

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a spiral ramp. The second, a long empty hall lined with tiers of bunks. The third, a similar hall in which the bunks were occupied. Pale faces peered from the tiers, pallid hands flickered. Up and down the central corridor marched squat matrons in gray gowns. Ervis Carcolo rushed forward, buffeting the matrons to the deck, peering into the bunks. "Outside," he bellowed. "You are rescued, you are saved. Outside quickly, while there is opportunity."

But there was only meager resistance to overcome from a half-dozen Weaponeers and Trackers, none whatever from twenty Mechanics — these, short thin men with sharp features and dark hair — and none from the sixteen remaining Basics.

All were marched off the ship as prisoners.

XIII

QUIET filled the valley floor, the silence of exhaustion.

Men and dragons sprawled in the trampled fields. The captives stood in a dejected huddle beside the ship. Occasionally an isolated sound came to emphasize the silence: the creak of cooling metal within the ship, the fall of a loose rock from the shattered cliffs; an occasional murmur from the liberated Happy Valley folk, who sat in a group apart from the surviving warriors.

Ervis Carcolo alone seemed restless. For a space he stood with his back to Joaz, slapping his thigh with his scabbard tassel. He contemplated the sky where Skene, a dazzling atom, hung close over the western cliffs, then turned, studied the shattered gap at the north of the valley, filled with the twisted remains of the sacerdotes' construction. He gave his thigh a final slap, looked toward Joaz Banbeck, turned to stalk through the huddle of Happy Valley folk, making brusque motions of no particular significance, pausing here and there to harangue or cajole, apparently attempting to instill spirit and purpose into his defeated people.

In this purpose he was unsuccessful. Presently he swung sharply about and marched across the field to where Joaz Banbeck lay outstretched.

Carcolo stared down. "Well, then," he said bluffly. "The battle is over, the ship is won."

Joaz raised himself up on one elbow. "True."

"Let us have no misunderstanding on one point," said Carcolo. "Ship and contents are mine. An ancient rule defines the rights of him who is first to attack. On this rule I base my claim."

Joaz looked up in surprise, and

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seemed almost amused. "By a rule even more ancient, I have already assumed possession."

"I dispute this assertion," said Carcolo hotly. "Who —"

Joaz held up his hand wearily. "Silence, Carcolo! You are alive now only because I am sick of blood and violence. Do not test my patience!"

Carcolo turned away, twitching his scabbard tassel with restrained fury. He looked up the valley, turned back to Joaz. "Here come the sacerdotes, who in fact demolished the ship. I remind you of my proposal, by which we might have prevented this destruction and slaughter."

Joaz smiled. "You made your proposal only two days ago. Further, the sacerdotes possess no weapons."

Carcolo stared as if Joaz had taken leave of his wits. "Then how did they destroy the ship?"

Joaz shrugged. "I can only make conjectures."

Carcolo asked sarcastically, "And what direction do these conjectures lead?"

"I wonder if they had constructed the frame of a spaceship. I wonder if they turned the propulsion beam against the Basic ship."

Carcolo pursed his mouth dubiously. "Why should the sacerdotes build themselves a spaceship?"

"The Demie approaches. Why do you not put your question to him?"

"I will do so," said Carcolo with dignity.

But the Demie, followed by four younger sacerdotes and walking with the air of a man in a dream, passed without speaking.

JOAZ rose to his knees and watched after him. The Demie apparently planned to mount the ramp and enter the ship. Joaz jumped to his feet, followed, barred the way to the ramp.

Politely he asked, "What do you seek, Demie?"

"I seek to board the ship."

"To what end? I ask, of course, from sheer curiosity."

The Demie inspected him a moment without reply. His face was haggard and tight. His eyes gleamed like frost-stars. Finally he replied, in a voice hoarse with emotion. "I wish to determine if the ship can be repaired."

Joaz considered a moment, then spoke in a gentle rational voice. "The information can be of little interest to you. Would the sacerdotes place themselves so completely under my command?"

"We obey no one."

"In that case, I can hardly take you with me when I leave."

The Demie swung around, and

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for a moment seemed as if he would walk away. His eyes fell on the shattered opening at the end of the vale, and he turned back.

He spoke, not in the measured voice of a sacerdote, but in a burst of grief and fury. "This is your doing! You preen yourself, you count yourself resourceful and clever. You forced us to act, and thereby violate ourselves and our dedication!"

Joaz nodded, with a faint grim smile. "I knew the opening must lie behind the Jambles. I wondered if you might be building a space-ship; I hoped that you might protect yourselves against the Basics, and so serve my purposes. I admit your charges. I used you and your construction as a weapon, to save myself and my people. Did I do wrong?"

"Right or wrong — who can weigh? You wasted our effort across more than eight hundred Aerlith years! You destroyed more than you can ever replace."

"I destroyed nothing, Demie. The Basics destroyed your ship. If you had cooperated with us in the defense of Banbeck Vale this disaster would have never occurred. You choose neutrality. You thought yourselves immune from our grief and pain. As you see, such is not the case."

"And meanwhile our labor of eight hundred and twelve years

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goes to naught," the Demie said.

Joaz asked with feigned innocence, "Why did you need a space-ship? Where do you plan to travel?"

THE Demie's eyes burst with flames as intense as those of Skene. "When the race of men is gone, then we go abroad. We move across the galaxy. We repopulate the terrible old worlds, and the new universal history starts from that day, with the past wiped clean as if it never existed. If the grephs destroy you, what is it to us? We await only the death of the last man in the universe."

"Do you not consider yourselves men?"

"We are as you know us — above-men."

At Joaz's shoulder someone laughed coarsely. Joaz turned his head to see Ervis Carcolo. " 'Overmen'?" mocked Carcolo. "Poor naked waifs of the caves! What can you display to prove your superiority?"

The Demie's mouth drooped, the lines of his face deepened. "We have our *tands*. We have our knowledge. We have our strength."

Carcolo turned away with another coarse laugh. Joaz said in a subdued voice, "I feel more pity for you than you ever felt for us."

Carcolo returned. "And where did you learn to build a space-ship? From your own efforts? Or from the work of men before you, men of the old times?"

"We are the ultimate men," said the Demie. "We know all that men have ever thought, spoken or devised. We are the last and the first. And when the under-folk are gone, we shall renew the cosmos as innocent and fresh as rain."

"But men have never gone and will never go," said Joaz. "A setback, yes. But is not the universe wide? Somewhere are the worlds of men. With the help of the Basics and their Mechanics, I will repair the ship and go forth to find these worlds."

"You will seek in vain," said the Demie.

"These worlds do not exist?"

"The Human Empire is dissolved. Men exist only in feeble groups."

"What of Eden, old Eden?"

"A myth, no more."

"My marble globe, what of that?"

"A toy. An imaginative fabrication."

"How can you be sure?" asked Joaz, troubled in spite of himself.

"Have I not said that we know all of history? We can look into our *tands* and see deep into the past, until the recollections are dim and misty, and never do we remember planet Eden."

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Joaz shook his head stubbornly. "There must be an original world from which men came. Call it Earth or Tempe or Eden; somewhere it exists."

The Demie started to speak, then in a rare show of irresolution held his tongue. Joaz said, "Perhaps you are right. Perhaps we are the last men. But I shall go forth to look."

"I shall come with you," said Ervis Carcolo.

"You will be fortunate to find yourself alive tomorrow," said Joaz.

Carcolo drew himself up. "Do not dismiss my claim to the ship so carelessly!"

Joaz struggled for words, but could find none. What to do with the unruly Carcolo? He could not find in himself enough harshness to do what he knew should be done. He temporized, turned his back on Carcolo.

"Now you know my plans," he told the Demie. "If you do not interfere with me, I shall not interfere with you."

The Demie moved slowly back. "Go then. We are a passive race. We despise ourselves for our activity of today. Perhaps it was our greatest mistake . . . But go, seek your forgotten world. You will only perish somewhere among the stars. We will wait, as already we have waited." He turned and walked away, followed by the four younger sacerdotes, who had all the time stood gravely to the side.

Joaz called after him. "And if the Basics come again? Will you fight with us? Or against us?"

The Demie made no response, but walked to the north, the long white hair swinging down his thin shoulder-blades.

Joaz watched him a moment, gazed up and down the ruined valley, shook his head in wonder and puzzlement, turned back to study the great black ship.

SKENE touched the western cliffs. There was an instant dimming of light, a sudden chill.

Carcolo approached him. "Tonight I shall hold my folk here in Banbeck Vale, and send them home on the morrow. Meanwhile, I suggest that you board the ship with me and make a preliminary survey."

Joaz took a deep breath. Why could it not come easier for him? Carcolo had twice sought his life, and, had positions been reversed, would have shown him no mercy. He forced himself to act. His duty to himself, to his people, to his ultimate goal, was clear.

He called to those of his knights who carried the captured heat-guns. They approached.

Joaz said, "Take Carcolo into Clybourne Crevasse. Execute him at once."

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Protesting, bellowing, Carcolo was dragged off. Joaz turned away with a heavy heart, and sought Bast Givven. "I take you for a sensible man."

"I regard myself so."

"I set you in charge of Happy Valley. Take your folk home, before darkness falls."

Bast Givven silently went to his people. They stirred, and presently departed Banbeck Vale.

Joaz crossed the valley floor to the tumble of rubble which choked Kergan's Way. He choked with fury as he looked upon the destruction, and for a moment almost wavered in his resolve. Might it not be fit to fly the black ship to Coralyne and take revenge on the Basics? He walked around to stand under the spire which had housed his apartments, and by some strange freak of chance came upon a rounded fragment of yellow marble.

Weighing this in his palm he looked up into the sky where Coralyne already twinkled red, and tried to bring order to his mind.

The Banbeck folk had emerged from the deep tunnels. Phade the minstrel-maiden came to find him. "What a terrible day," she murmured. "What awful events. What a great victory."

Joaz tossed the bit of yellow marble back into the rubble. "I feel much the same way. And where it all ends, no one knows less than I!" — JACK VANCE

☆ ☆ ☆ ☆ ☆

FORECAST

In October Galaxy we begin a two-part serial called *Plague of Pythons* — the by-line is Frederik Pohl — and add to it at least a pair of first-class novelettes: *The Ballad of Lost C'Mell,* by Cordwainer Smith, and *Who Dares a Bulbur Eat?* by Gordon R. Dickson. We say "at least a pair;" actually, Theodore Sturgeon is hard at work on the final draft of one that we plan to rush into print if we get it in time — and that one is going to be worth reading! — but it remains to be seen if it'll be in the next issue or later.

Anyway, there'll be shorts, a particularly interesting Willy Ley column, etc. Don't miss the October Galaxy; it's a good one!

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By FRANK BANTA

HANDYman

They didn't have to worry about a thing for the rest of their natural lives . . .

JAMES Ypsilanti swung at the door with the steak cuber. Or was it the cube steaker? No matter. The door was a good, hardwood door and resisted his onslaught well. But time was on his side.

He had the energy and the time, he knew, and sooner or later the door would be kindling.

It was the door to his room. It was evident to him that he did not need the door to his room and that he *did* need heat. In fact he had better get some heat pretty soon — although he was keeping warm enough for the present by beating on the door. So he would beat this door to kindling, and then he would build a nice, cozy fire in the hall that would keep him warm for a long time . . . if he was stingy with his fuel.

The carpenter came by. The carpenter was always coming by, except when you wanted him, Jim realized. The carpenter was a mighty, mighty busy fellow.

The carpenter stopped short when he saw Jim demolishing the door. In fact he came to a grinding halt.

"Jim, why didn't you tell me!"

"Carpenter, how was I to know where you were? Who can ever find you?"

"I know Jim. Jim, you work so hard!"

"Yes!" he said, pounding.

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"Take this hatchet, Jim. A hatchet is what you demolish doors with! Good-by." The carpenter departed.

James Ypsilanti swung on the door with his newly acquired hatchet. Soon he was ready for his fire. He struck a match, and in no time had the pile of varnished kindling blazing smokily in the hall. He held his hands over the blaze.

"Ah, good, good. Good." He closed his eyes. "What could be better than this?" Then he opened them again regretfully. "It's dinner time. I'd better fix it while I have my fire going." He hurried to the kitchen and chose a can of eggs-bacon-and-pancakes from the massive stores.

OPENING the large can, he heated it over his hall fire. Then he dumped the contents on his tin plate and ate.

"Murder," he thought somberly. "That's what I'm in for. Practically murder with consent. She said she couldn't live without me. Margie begged me to kill her, you might as well say. Good old Margie; a good kid, but I killed her. And now . . . Well, that's life!" He speared a pancake.

"Damn, but it's *cold!*" He threw an armload of wood on the fire and it blazed up. "Sure wish these carpenters had feelings. My lord, they got no feelings at all!"

The carpenter arrived with a new hardwood door. Whistling cheerily, he began to install it where the other one had just been hatcheted away.

"Carpenter, that door won't be staying there long. I'm almost out of fuel."

"I hope you don't expect me to be surprised, Jim, if this door doesn't last very long. The previous twenty-two doors at this location, Jim, did not last very long either." Still whistling to himself, he installed the last of the hinge screws.

"Why don't you just *give* me the doors, instead of causing yourself all this work?" demanded James Ypsilanti.

" 'Inmates will not be issued materials,' Jim. I've quoted that section of the rules to you many times, Jim."

"But couldn't you just *lean* the door up against the door jamb and leave it?" argued the inmate. "You go to a ridiculous amount of trouble."

"It is not ridiculous, Jim. I am a carpenter, Jim. Good-by."

After lunch, James Ypsilanti crawled into his escape tunnel.

He liked to go in there every day and daydream. The tunnel ended abortively at the wall of the prison, for the prison wall extended down into solid bed rock for a meter, and it was fabricated of one-meter thick compressed

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steel. It was the nearest thing to an exit that the prison had.

Officials had always come and gone through the massive, engloбing wall by matter transmitters. "Smarties couldn't find me though, when I was in my escape tunnel." he chortled, as he stretched out in the cave under the concrete. "They can walk through walls, but they couldn't find *me*." Then his tone became baleful. "The smarties'll *never* find me."

AS JAMES Ypsilanti chopped on the door next day, the carpenter stood cheerily watching.

"Carpenter, why don't you fix the damn heating plant? Then I wouldn't have to be chopping up your doors all the time to keep warm."

"I am a carpenter, Jim, not a heat-plant fixer, as you well know from our previous negotiations on the subject."

"What will you do, carpenter, when I have used up all your doors?" the convict jibed.

"Why, Jim, we will have to send out for some more," the carpenter answered condescendingly.

"Still, I wish you would let *me* work on that heat plant," urged Ypsilanti. "I might fix it."

" 'Inmates will not be permitted to disassemble or otherwise interfere with the machinery of the institution,' " quoted the carpenter. "Need I say more, Jim?"

"Okay," said James Ypsilanti, resuming his destructive work on the new door. "Scram, stupid." The carpenter departed.

"That dope," Jim said between blows, "is even foggier in the head than my lousy lawyer was, and that's going some."

"Jim," said the carpenter, returning and sounding very pleased with himself, "look here at what I have found, Jim."

James Ypsilanti turned to look at what the carpenter held in his hand. It was a carpenter's square sheathed in plastic.

"Found enough of them to last me a lifetime, Jim," said the carpenter complacently. "I'll never have to buy any."

"No, you won't," agreed James Ypsilanti bitterly. "Can't you get it into your head that you and I are the only ones left on Earth? After the war the rest left. They couldn't *find* us when they evacuated this atomic-explosion wrecked planet, because we were in this escape-proof jug. So they went away and *left* us!"

"I know, Jim."

Ypsilanti studied the mobile features of the carpenter, searching intently for a sign.

But the carpenter robot strolled away, whistling.

— FRANK BANTA

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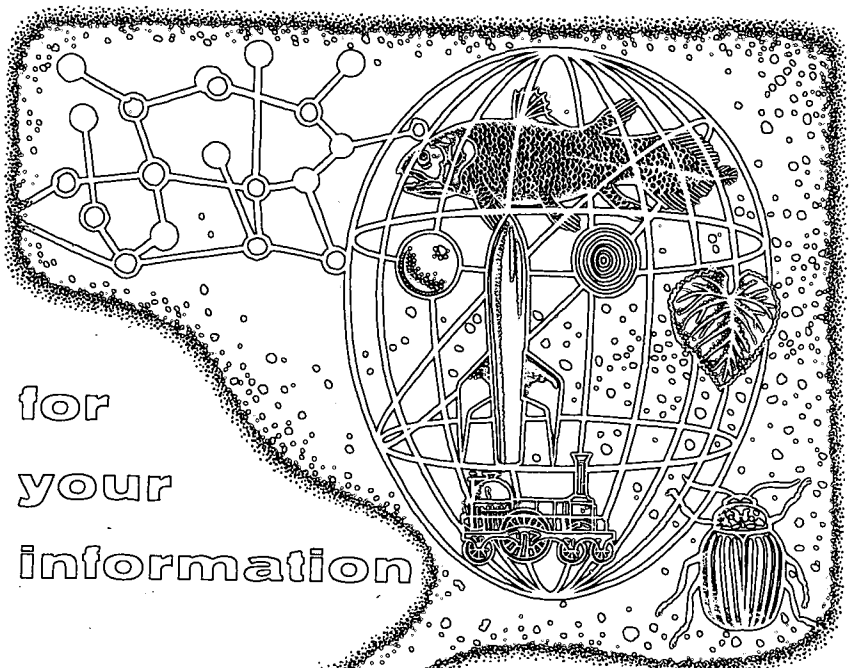

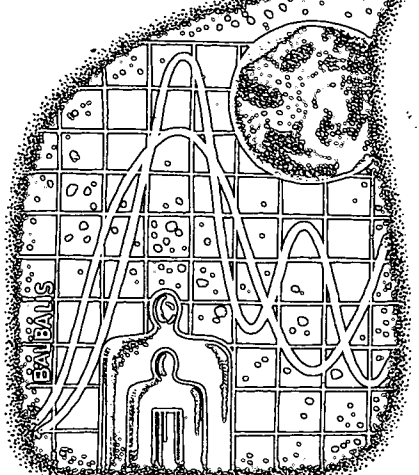

By WILLY LEY

ROTATING LUMINOUS WHEELS IN THE SEA

"SCIENCE," I have told students and lecture audiences on numerous occasions, "is a self-correcting process. It never stands still, mainly because new material is constantly being added."

This column is just one more illustration for this statement. When I reported on Commander Bodler's encounter with a gigantic luminous, rotating "pinwheel" in the waters of the Gulf of Oman I had only vaguely heard of such a phenomenon before. (If you

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keep a file of *Galaxy*, please reread his report in the December 1960 issue.) A reader then called my attention to a chapter in one of Charles Fort's books and I was able to quote half a dozen more cases (*Galaxy*, June 1961.) While I was still brooding about the phenomenon I received an airmail letter from Arthur C. Clarke telling me that, according to a British scientific journal, a German publication contained a whole collection of such cases.

Since these enormous, rotating, luminous wheels are such a breathtakingly unusual phenomenon — even sober logbook entries abound in terms like "weird," "most awe inspiring," "an effect of great eerieness," *unheimlich* (German for fear-inspiring) and *angstwekkende indruk* (Dutch for fear-inspiring) — the source for what is to follow should be stated first. The journal in question is the *Deutsche Hydrographische Zeitschrift*, vol. XIII, No. 2 (April 1960), published in Hamburg by the German Hydrographic Institute. Incidentally, about three quarters of this article is in English. The author is Professor Dr. Kurt Kalle. Dr. Kalle's sources, in turn, are mainly *The Marine Observer*, published by Her Britannic Majesty's Stationery Office, and some logbooks of German and Dutch vessels.

None of the cases quoted in Dr. Kalle's report are identical with the ones I reported in *Galaxy*. In the tabulation later in this column I have added the cases from the *U. S. Naval Institute Proceedings* and from Fort's book.

THE total number of observations quoted by Dr. Kalle is seventy, but not all of them are about rotating luminous wheels. In going through all the reports of highly unusual phosphorence in the sea that he could find he established several categories. At first these categories were merely to aid in sorting out, and were based on the described appearance of the phenomenon. Later, he found a very interesting and probably significant corollary. His first section, comprising six reports, he labelled "general and superficial descriptions," a somewhat harsh term, for some of them are impressive indeed. Besides I would have put three of these reports into the second section, which in Dr. Kalle's article consists of 23 reports.

These reports are all alike in that they describe what looks almost like an explosion. "Balls of light" suddenly appear at the ocean's surface, spreading out with utmost rapidity to cover an area of a hundred square yards or more. Here are a few examples of these reports:

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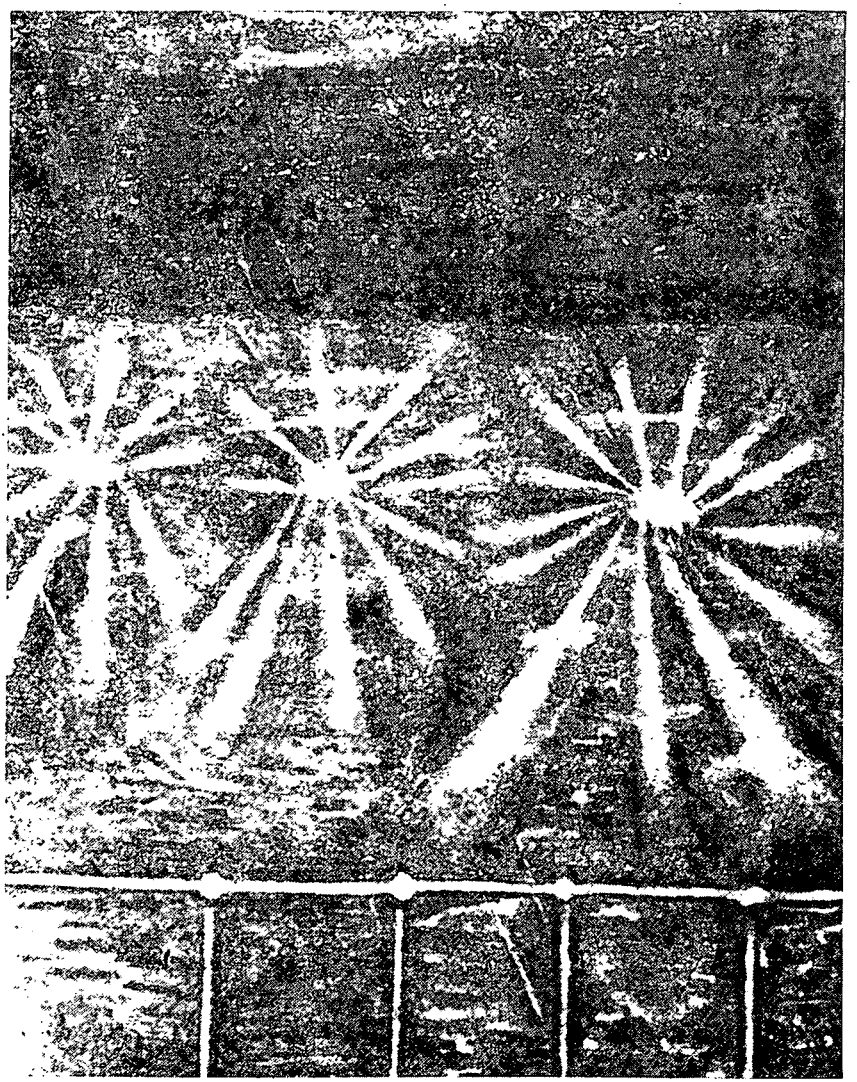

View of three revolving phenomena from board of the S. S. Arracan.
Observed December 19, 1927, northern part of the Andaman Sea.

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The cargo ship *Stephan* was, on September 30, 1923, at 46° northern latitude and 15° western longitude, which is in the Atlantic Ocean to the west of the Bay of Biscay. The sea phosphoresced and "occasionally an extra brilliant patch would seem to bubble up from the bottom of the sea, burst into vivid light and spread rapidly over the surface before gradually fading away."

The captain of the S.S. *Omar* had a very similar story to tell. His ship was at 7° 50' N., 76° 18' E., which is in the Indian Ocean to the South of Ceylon; the date was October 14, 1923. "These patches of light, whilst expanding, became very brilliant and after about two minutes died away. They commenced with a diameter of about one foot and expanded to at least 30 yards."

Two years later, on August 23, 1925, the officer of the watch (not named) of the German passenger liner *Preussen* produced the following description: "From right next to the ship and up to the limit of vision luminous balls rose from the lower strata of the ocean. Their distances from each other varied from 12 to 100 feet. The time interval between appearances varied between 20 and 30 seconds. The balls seemed to rise with a speed of about half a yard per second and had an estimated diameter of 8 inches. Just below the surface they expanded to a diameter of about half a yard. When reaching the surface these spheres expanded and flattened. It looked as if they were bursting. The area occupied by such a phantom body was ellipsoid in shape, with a major axis from 10 to 20 feet and a minor axis of 6 to 10 feet. The larger ones of them retained their intense silvery-greenish luminosity with a shivering motion until we lost sight of them." The location of the *Preussen* was also in the Indian Ocean, but to the west of that of the *Omar,* the precise position being 9° N., 63° East.

A little more than a year later, on October 31, 1926, *S. S. Somersetshire,* being in the same general area as the *Omar* and the *Preussen* (7° 30' N., 74° 30' E.) saw the same thing. P. H. Potter, the second officer, described it as "balls of brilliant light seemed to shoot from the depth, burst on nearing the surface, irradiate and cover an area, seemingly of a couple of hundred square yards."

MOST of the reports of "exploding" balls of light come from the Indian Ocean, being strung out roughly along the 10th parallel of northern latitude from the African east coast to Ceylon's west coast.

Before I mention the interesting fact discovered by Dr. Kalle

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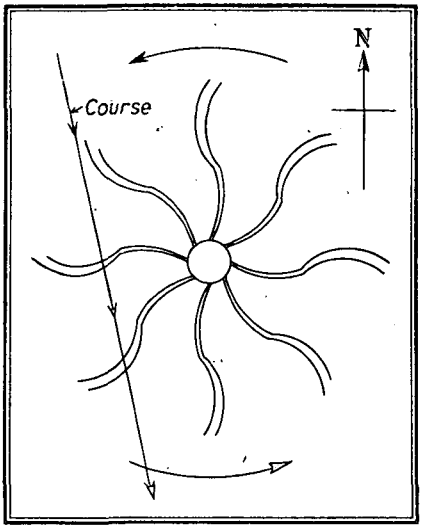

Sketch made by an officer of the S. S. Talma. Observed December 28, 1929, northern part of the Andaman Sea.

I have to explain briefly the other categories established by him. His category (C) consists of reports — eleven of them — which describe waves of light, apparently parallel and not curved, which move rapidly across the surface of the sea. Category (D) comprises seven reports about waves of light which have a motion as if they were rotating around a common center, the center, however, being not visible to the observer who reported it. The final category, twenty-four reports, deals with rotating wheels which have a clearly visible center.

When dealing with reports of this kind, the obvious first step is to take a map of the world and enter the various observations according to their geographical locations. Naturally Dr. Kalle did this. He found that all the reports, except three, came from the Indian Ocean. Of the three which were not from the Indian Ocean two were from the Atlantic. One of them was that of the *Stephan* quoted above; the other one came from the *John Holt,* February 19, 1957, from the vicinity of the Cape Verde Islands, also in the Atlantic. The third came from the *S. S. Tasmania* (May 21, 1933), which was at sea to the west of the North Island of New Zealand. After Dr. Kalle had drawn his map he naturally entered the depth of the ocean at the places of the observation. The surprise came then.

The average depth of the ocean for *all* cases of "exploding" light balls was over 10,000 feet. The least was about 1700 feet while one could not be judged properly. The location was just where the continental shelf slopes into the abyss. Since the ship's position was not given within, say, 200 yards, the depth of water under the keel could have been anything from 700 to 3500 feet. But the average depth for the waves of light, whether seemingly parallel or rotating was *less than 300 feet,* again with two excep-

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tions due to the nearness of the edge of the continental shelf.

The only definite exception as regards the freshly established rule of shallow water for parallel or rotating light beams was the *S. S. Somersetshire* on August 13, 1925. The position was 12° 38' N., 55° 28' E, which is not very far from the east coast of Africa. As a matter of fact I do not consider the report made by P. Hawkins, the second officer, very typical for the parallel light waves, since he wrote: "A white line seemed to be coming toward the ship at a tremendous speed from the eastward, which had the appearance of breakers. Very shortly after, the whole sea was quite white, with now and again circular and streaky black patches, and the whole surroundings were brilliantly lightened up." But Hawkins added a very interesting comment: "During this time (9:20 P.M. till 10:40 P.M.) the atmospheric conditions were extraordinary. No sound was heard, not even the wind nor the breaking of the sea. No swell was visible; and the vessel, which had previously been rolling heavily, had practically no movement on her. In fact, one could almost have been in dock."

A FAR more typical report on the parallel waves was delivered by D. Brown, the second officer of the *S.S. City of Khios* on July 23, 1954. The ship was at 24° 19' N., 66° 20' E., in the northernmost part of the Arabian Sea, with a depth of water of about 200 feet. "Shafts of pale white light were observed moving swiftly NE-SW. They appeared to be just above the surface of the sea and parallel with each other. They were passing the ship at the rate of about one per second. They appeared to stretch as far as the eye could see on each side of the vessel and did not at any time appear to curve. After about 15 minutes the phenomenon disappeared."

While the experience of the *S. S. Somersetshire* must have been awe-inspiring, the case does not necessarily belong into this collection. If it be discarded as being "something else," whatever that may be, there is no exception to the rule found by Dr. Kalle that the exploding balls are a deep-water phenomenon, while the light beams appear only over the continental shelf. He himself wrote that "this result reinforces the supposition that the distinction into 'exploding' and 'rotating' types, which was based on the differences in appearance and behavior, is essentially correct."

This fact is not very helpful in explaining either one of these phenomena. But in a field where observations (or at any event re-

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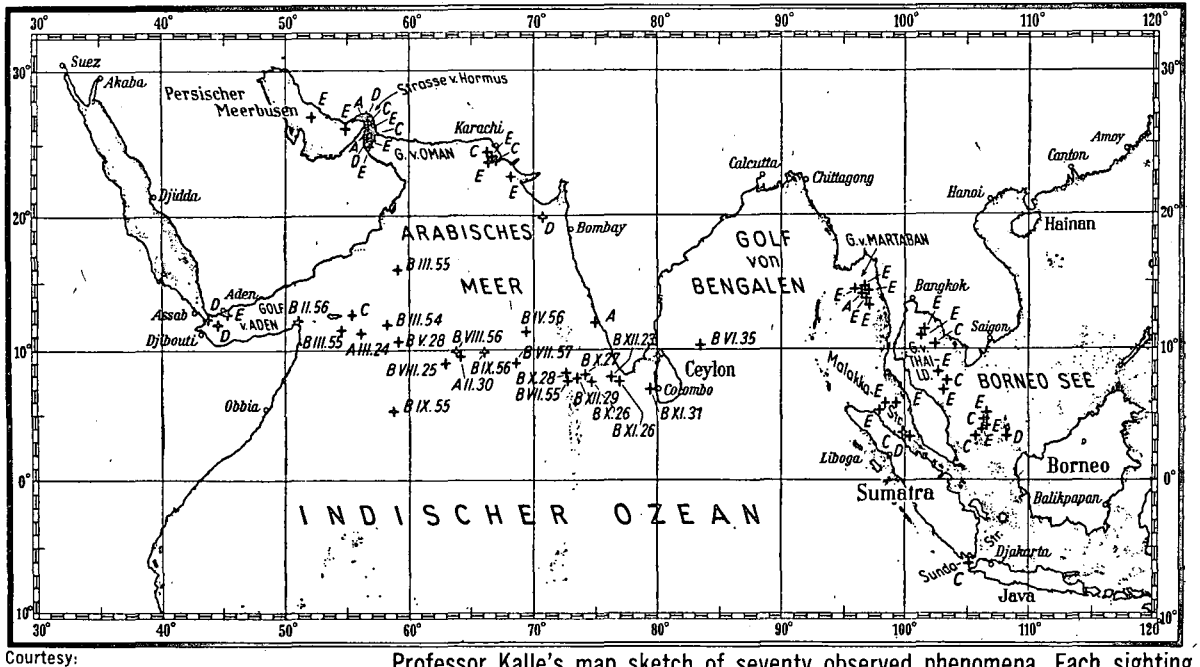

Courtesy:
German Hydrographic Institute

Professor Kalle's map sketch of seventy observed phenomena. Each sighting is indicated by a + sign. The letter indicates the type of phenomenon. Roman numerals indicate month of the year seen, followed by the year (all sightings on this map are after 1900.) Key to letters: A, unusual but non-specific phosphorescence; B, "exploding" light balls; C, apparently parallel light waves; D, rotating phenomenon, center invisible to observer; E, rotating phenomenon, center visible to observer.

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ports) have become reasonably frequent only during the last three decades, any definite fact is welcome. It may become important at a later date when more is known.

After quoting one more case of parallel light beams, because it contains an interesting guess, we can go on to the rotating beams. That case was reported by Captain Bradley of the *S. S. Aristo.* It was seen in July, 1938 (no date given) and the position of the vessel was 23° 56' N., 66° 53' E., quite close to the position of the *City of Khios.* "The beams," Captain Bradley wrote, "traveled in the reverse direction of the wind, sea and swell . . . The rapidly moving beams of luminosity may have been caused by minute phosphorescent organisms turning in a certain direction. Not that they moved rapidly from place to place, but that they remained practically stationary and only altered position to expose their luminous sides. Whatever the cause, the phenomenon was most awe-inspiring. No wonder that the mariners of old were so prone to superstition and returned to their native shores full of weird and wonderful tales of the sea."

The oldest report of rotating beams quoted by Dr. Kalle is dated May 23, 1906 and comes from the Gulf of Oman. The most interesting aspect is that it was observed from shore. The observer, a German by the name of A. Stürken, said that he was standing on board a ship which had made fast on a pier near Bender Abbas. The geographical position of the pier is given as 26° N., 57° E.

"The southern horizon was a luminous ribbon which looked precisely as if there were a heavy surf out there. The intensely bright luminescence approached us rapidly, shooting sharply defined light rays to the West in rapid succession, looking like the beam from the searchlight of a warship. Then the whole luminous flood — always below the water's surface—approached our ship. Wide waves of fire, 200 to 300 yards long, came in endless succession and passed under our keel for a period of about three minutes. Then the picture changed suddenly. To the left of us, about 550 yards away, a gigantic fiery wheel formed itself with spokes that reached as far as one could see. The whole wheel whirled around for two or three minutes. Then all of the luminescence moved away, as fast as it had arrived. For a moment it was visible near the horizon and then the apparition was over." (The word used by Stürken which I translated as "apparition" is *Spuk,* normally

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used for alleged supernatural phenomena, like seeing a ghost or witnessing Walpurgis Night.)

MOST reports deal with the phenomenon when it is, if this phrase is applicable here, in full bloom. Most of the time the ship runs into a rotating wheel, or sees it some distance away. But the crew of the S.S. *Aeneas* saw it develop. The date was December 3, 1926; the place 5° 48' N., 98° 9' E., in the Strait of Malacca, between Sumatra and the Malay Peninsula. The report was written by J. M. Anderson, who was second officer of the ship. The phenomenon began at 30 minutes after midnight:

"Commencing with but a few isolated points and patches of sparkling and pulsating light, the display developed until the surface of the sea from horizon to horizon had the appearance of being lit up from below, by thousands of beams of light which independently flashed and were eclipsed with great regularity, at intervals of about one second. This phosphorescence increased in brilliancy until 1:45 A.M. Two distinct systems of light waves or phosphorescent wheels were observed, one to port and one to starboard. These light waves were observed to be traveling clockwise over the surface of the sea, appearing to issue from a focus around which they rotated, increasing in brilliancy and velocity of rotation until 2:05 A.M. The phosphorescent points and patches previously described were noticed to increase in brilliancy as the illuminated beams swept over them and to decrease in intensity during the passage of the successive dark spaces, and this phenomenon was quite noticeable even when the light waves, toward the end of the display, became quite faint. At 2:15 A.M. the light waves were no longer visible, and at 2:30 A.M. the last traces of phosphorescence were observed."

The crew of the S. S. *Arracan*, on December 19, 1927, being in the same general area (14° 23' N., 96° 3' E.) also watched the development of a rather short-lived phenomenon. At 2 A.M. the vessel passed "through small clusters of phosphorescent light." Very soon after, "these clusters of light expanded into bars and commenced to revolve in an anticlockwise direction, and appeared to pass the bridge, from where they were observed, at the rate of one every half second. This phenomenon was in the form of a Catherine wheel, the hub of which could be observed plainly about two hundred yards to the westward of the ship's course. At 2:05 A.M. the phosphorescent light failed, and then became

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brighter, and on this occasion the spokes or beams of light revolved in the opposite direction, i. e. clockwise. At 2:15 A.M. this phenomenon disappeared. On each occasion the hub of the Catherine wheel was clearly visible to the westward of the ship."

Quite close to the position of the *S. S. Arracan*, namely at 14° 15' N, 96° 41' E., and almost precisely two years later, namely on December 28, 1929, the *S.S. Talma* also observed a rotating wheel. The "spokes" were curved (see Fig. 2) and about 30 feet wide when they hit the ship. The "spokes" followed each other at intervals of half a second. The hub of the wheel, which could not be seen very clearly, seemed to be about five miles from the ship. The duration of the whole was 15 minutes. This report has an interesting postscript: "It was later reported from the engine room that at this time the revolutions [of the engine] dropped considerably and the main engines were straining. As this straining of the engines appeared to me to point to the possibility of a marine volcanic disturbance I considered it advisable to send out a wireless warning."

IT would serve little purpose to quote more reports. They all read more or less alike and all stress the weird impressiveness of the sight — quite naturally, since for each observer it was the first time that he saw it. One exception to that rule is the experience of Captain R. W. White and his second officer, C. Jackman, who saw it three times, on September 9, October 5 and December 29, 1932. The location for all three observations was the Andaman Sea and Second Officer Jackman, on the third occasion, merely entered: "Experienced the same phenomenon, duration 26 minutes." Well, one can also get used even to being under artillery bombardment, as many soldiers can testify.

Geographically the phenomenon of the rotating lights clearly centers around two areas. The first one is the Gulf of Aden, the Persian Gulf and the Gulf of Oman, plus the coastline to the East of the Gulf of Oman to about Bombay. The other area is the sea around the Malay Peninsula, the Andaman Sea, the Strait of Malacca and the Borneo Sea.

For simplicity's sake I referred to these two areas as the Western and the Eastern Phenomenon and, trying to see whether the seasons (admittedly not too noticeable in these tropical seas) had anything to do with the frequency of occurrence, I tabulated all reports as to their dates. (See table.)

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TABLE OF SEASONAL FREQUENCY OF OBSERVATIONS

		WESTERN PHENOMENON	EASTERN PHENOMENON
		Number of Observations:	
JANUARY	first half	—	—
	second half	1	—
FEBRUARY	first half	—	—
	second half	—	2
MARCH	first half	—	1
	second half	2	—
APRIL	first half	2	—
	second half	2	2
MAY	first half	3	—
	second half	1	2
JUNE	first half	—	1
	second half	2	1
JULY	first half	2	—
	second half	2	1
AUGUST	first half	1	1
	second half	—	—
SEPTEMBER	first half	1	2
	second half	1	—
OCTOBER	first half	—	1
	second half	—	2
NOVEMBER	first half	2	4
	second half	1	1
DECEMBER	first half	—	1
	second half	—	3

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It can be seen that the Western Phenomenon shows a rather faint clustering for the period from late March to the end of July, while the Eastern Phenomenon shows a somewhat more pronounced clustering for the period from October through December. But, since neither clustering is very pronounced, it might be argued that the apparent concentration during the last three months of the year for the Eastern Phenomenon is caused by the simple fact that the number of reports is not large enough to be meaningful. Dr. Kalle has a total of only five reports for the years from 1906 to 1914. Then there is a complete absence of reports for the years 1915 to 1919, caused, no doubt, by the first World War. There is the same absence of reports for the years from 1939 to 1949, caused by the second World War and its aftermath. No doubt quite a number of reports from those years do exist but, since they formed part of otherwise classified material, were never published. And so far the collection is somewhat limited also to nationality. Reports from British vessels seem to be known more or less completely, thanks to *The Marine Observer,* and some reports from Dutch vessels have appeared in the Dutch marine publication *De Zee.* Nobody, so far, has gone over the material that might be hiding in French and Portuguese publications. I expect the latter especially to yield much material because the sea route from Portugal to Goa went through the waters which are prone to produce the phenomenon.

After the reports which were classified because of wartime, and the French and Portuguese reports, have been added to the material the seasonal statistics may look different.

NOW for an attempt to explain all this.

Before I give Dr. Kalle's explanation I have to quote a sentence he wrote in the introductory paragraph of his paper: "A definitive explanation of this natural phenomenon, which occurs at night and at sea in a surprising manner, tempting observers to think of cosmic or supernatural causes, does not yet exist." The tentative explanation which is then advanced by Dr. Kalle is based on the known fact that luminescent marine organisms do not luminesce all the time. If they did, we would have phosphorescence all the time. But when the sea does phosphoresce it can clearly be seen that the organisms respond to physical stimuli. No captain of a sailing vessel ever produced as bright a wake as do the propellers of a

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steamer or motor ship. And if you stand in shallow water when there is phosphorescence you can produce an extra bright flash by the simple expedient of striking the surface with your outstretched hand.

The small organisms — they are not actually microscopic, as one can read in many places, since the most common one measures about a millimeter in diameter — definitely respond to the shock wave produced by the blow on the surface.

That they also seem to respond to something we don't even feel is shown by the report of the ship's master of the *M. S. British Premier* (Nov. 30, 1951; location: southern portion of the Persian Gulf): "The ship's radar apparatus had been switched on with a view to checking her position, when, in the same instant this gear became operative, most brilliant boomerang-shaped arcs of phosphorescent light appeared in the sea, gyrating in a clockwise direction to starboard and anticlockwise to port, but all sweeping inward toward the ship."

Now since the luminescence can be excited by a stimulus it is, as Captain Bradley of the *Aristo* pointed out, not necessary that the organisms themselves move rapidly. A rapidly moving stimulus would produce the same appearance. Professor Kalle thinks that shock waves provide this stimulus, the shock waves themselves being caused by submarine earthquakes.

The rotating wheels, according to the same theory, might be caused by the interference of shock waves from two different sources, of which the second might be a reflection of the first. Dr. Kalle places some emphasis on this thought.

The validity of the whole explanation depends on a rapid "lights on, lights off" of the organisms involved. If they, once stimulated, continue to luminesce for a few minutes, one would only

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get a generally luminous sea from seismic shock waves but no definite figures. So the next point of the investigation lies in the field of marine biology. First it has to be established just what organism, or organisms account for most of the phosphorescence in the areas involved. Then it has to be established whether they respond to shock waves, which offhand seems likely but may require the presence of another condition. Finally it has to be established whether they "switch off" again quickly, so that the luminescence lasts only for the duration of being hit with the shock-wave. (A small time lag of half a second or so would be acceptable.) Once the answer to all three of these questions has been found to be yes, a mathematical analysis of the agreement or disagreement between observations and velocities of shockwaves under water could be undertaken.

I have one more question in my mind: Has there ever been a naval battle at night in one of these areas? And did the shell splashes cause light waves, wheels and counter-wheels?

If so, shouldn't it be possible to produce a rotating wheel by means of underwater explosions . . . so that it does not come as a surprise but can be set off when everything is ready for its study?

— WILLY LEY

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ROBERT M. GUINN, *Publisher*

Sworn to and subscribed before me this 21st day of September, 1961.

Jacques N. Glick, Notary Public, State of New York, No. 03-1457100. Qualified in Bronx County. Cert. filed in New York County. (Commission expires March 30, 1963)

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First Contact was always dangerous — but usually only to the man involved!

A MATTER OF PROTOCOL

By JACK SHARKEY Illustrated by SCHELLING

FROM space, the planet Viridian resembled a great green moss-covered tennis ball. When the spaceship had arrowed even closer to the lush jungle that was the surface of the 7000-mile sphere, there was still no visible break in the green cloak of the planet. Even when they dipped almost below their margin of safety—spaceships were poorly built for extended flight within the atmosphere—it took nearly a complete circuit of the planet before a triangle of emptiness was spotted. It was in the midst of the tangled canopy of treetops, themselves interwoven inextricably with coarse-leaved ropy vines that sprawled and coiled about the upthrust branches like underfed anacondas.

Into the center of this triangle the ship was lowered on sputtering blue pillars of crackling energy, to come to rest on the soft loamy earth.

A bare instant after setdown, crewmen exploded from the airlock and dashed into the jungle shadows with high-pressure tanks of gushing spume. Their job was to coat, cool and throttle the hungry fires trickling in bright orange fingers through the heat-blackened grasses. Higher in the trees, a few vines smoldered fitfully where the fires had brushed them, then hissed into smoky wet ash as their own glutinous sap smoth-

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ered the urgent embers. But the fire was going out.

"Under control, sir," reported a returning crewman.

Lieutenant Jerry Norcriss emerged into the green gloaming that cloaked the base of the ship with a net of harlequin diamonds. Jerry nodded abstractedly as other crewmen laid a lightweight form-fitting couch alongside the tailfins near the airlock. On this couch Jerry reclined. Remaining crew members turned their fire-fighting gear over to companions and stood guard in a rough semi-circle with loaded rifles, their backs to the figure on the couch, facing the jungle and whatever predatory dangers it might hold.

Ensign Bob Ryder, the technician who had the much softer job of simply controlling and coordinating any information relayed by Jerry, leaned out through the open circle in the hull.

"All set, sir," said the tech. Jerry nodded and settled a heavily wired helmet onto his head, while Bob made a hookup between the helmet and the power outlet that was concealed under a flap of metal on the tailfin.

Helmet secured, Jerry lay back upon the couch and closed his eyes. "Any time you're ready, Ensign."

Bob hurried back inside, found the panel he sought among the jumble of high-powered machinery there, and placed a spool of microtape on a spindle inside it.

He shut the panel and thumbed the button that started an impulse radiating from the tape into the jungle.

The impulse had been detected and taped by a roborocket which had circled the planet for months before their arrival. It was one of the two Viridian species whose types were as yet uncatalogued by the Space Corps, in its vast files of alien life. Jerry's job, as a Space Zoologist, was to complete those files, planet by planet throughout the spreading wave of slowly colonized universe.

Bob made sure the tape was functioning. Then he clicked the switch that would stimulate the Contact center in Jerry's brain and release his mind into that of the taped alien for an immutable forty minutes.

Outside the ship, recumbent in the warm green-gold shadows, Jerry's consciousness was dwarfed for an instant by a white lightning-flash of energy. And then his body went limp as his mind sprang with thought-speed into Contact . . .

JERRY opened his eyes to a dizzying view of the dull brown jungle floor. He blinked a moment, then looked toward his feet. He saw two sets of thin knobby Vs, extending forward

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and partly around the tiny limb he stood upon, their chitinous surface shiny with the wetness of the jungle air.

Slowly working his jaws, he heard the extremely gentle "click" as they came together. The endoskeleton must exist all over his host's body.

After making certain it would not disturb his balance on the limb, he attempted bringing whatever on the alien passed for hands before his face.

Sometimes aliens had no hands, nor any comparable organisms. Then Jerry would have to soft-pedal the mental nagging of being "amputated," an unavoidable carryover from his subconscious "wrong-feeling" about armlessness.

But this time the effort moved up multi-jointed limbs, spindly as a cat's whiskers, terminating in a perpetually coiling soft prehensile tip. He tried feeling along his torso to determine its size and shape. But the wormlike tips were tactilely insensitive.

Hoping to deduce his shape from his shadow, he inched sideways along the limb on those inadequate-looking two-pronged feet toward a blob of yellow sunlight nearer the trunk.

The silhouette on the branch showed him a stubby cigar-shaped torso.

"I seem to be a semi-tentacled no-hop grasshopper," he mused to himself, vainly trying to turn his head on his neck. "Head, thorax and abdomen all one piece."

He tried flexing what would be, in a man, the region of the shoulderblades. He was rewarded by the appearance of long, narrow wings—two sets of them, like a dragonfly's—from beneath two flaps of chitin on his back.

He tried an experimental flapping. The pair of wings—white and stiff like starched tissue paper, not veinous as in Earth-insects—dissolved in a buzzing blur of motion. The limb fell away from under his tiny V-shaped feet. And then he was up above the blinding green blanket of jungle treetops, his shadow pacing his forward movement along the close-packed quilt of wide leaves below.

"I'd better be careful," thought Jerry. "There may be avian life here that considers my species the *piéce de resistance* of the pteroid set . . . "

Slowing his rapid wingbeat, he let himself drop down toward the nearest mattress-sized leaf. He folded his out-thrust feet in mid-air and dropped the last few inches to a cushiony rest.

A SLIGHT shimmer of dizziness gripped his mind.

Perhaps the "skull" of this creature was ill-equipped to ward off

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the hot rays of the tropic sunlight. Lest his brain be fried in its own casing, Jerry scuttled along the velvet top of the leaf, and ducked quickly beneath its nearest overlapping companion. The wave of vertigo passed quickly, there in the deep shadow. Under the canopy of leaves Jerry crawled back to a limb near the top of the tree.

A few feet from where he stood, something moved.

Jerry turned that way. Another creature of the same species was balancing lightly on a green limb of wire-thickness, its gaze fixed steadily toward the jungle flooring, as Jerry's own had been on entering the alien body.

Watching out for predators? Or for victims?

He could, he knew, pull his consciousness back enough to let the creature's own consciousness carry it through its daily cycle of eating, avoiding destruction, and the manifold businesses of being an ambient creature. But he decided to keep control. It would be easier to figure out his host's ecological status in the planet's natural life-balance by observing the other one for awhile.

Jerry always felt more comfortable when he was in full control. You never knew when an alien might stupidly stumble into a fatality that any intelligent mind could easily have avoided.

Idly, as he watched his fellow creature down near the inner part of the branch, he wondered how much more time he would be in Contact. Subjectively he'd seemed to be enhosted for about ten minutes. But one of the drawbacks of Contact was the subjugation of personal time-sense to that of the host. Depending on the species he enhosted, the forty-minute Contact period could be an eternity, or the blink of an eye . . .

NOTHING further seemed to be occurring. Jerry reluctantly withdrew some of his control from the insect-mind to see what would happen.

Immediately it inched forward until it was in the same position it had been in when Jerry made Contact: V-shaped feet forward and slightly around the narrow branch, eyes fixed upon the brownish jungle floor, body motionless with folded wings. For awhile, Jerry tried "listening" to its mind, but received no readable thoughts. Only a sense of imminence . . . Of patience . . . Of waiting . . .

It didn't take long for Jerry to grow bored with this near-mindless outlook. He reassumed full control. Guiding the fragile feet carefully along the branch, he made his way to his fellow watcher, and tried out the creature's communication system. His mind

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strove to activate something on the order of a larynx; the insect's nervous system received this impulse, changed in inter-species translation, as a broad request for getting a message to its fellow. Its body responded by lifting the multi-jointed "arms" forward. It clapped the hard inner surfaces of the "wrists" together so fast that they blurred into invisibility as the wings had done.

A thin, ratchetty sound came forth from that hardshell contact. The other insect looked up in annoyance, then returned its gaze to the ground again.

Aural conversation thus obviated, Jerry tried for physical attention-getting. He reached out a vermiform forelimb-tip and tugged urgently at the other insect's nearest hind leg. An angry movement gave out the unmistakeable pantomimic message: "For pete's sake, get off my back! I'm *busy*!" The other insect spread its thin double wings and went buzzing off a few trees away, then settled on a limb there and took up its earthward vigil once more.

"Well, they're not gregarious, that's for sure," said Jerry to himself. "I wish I knew what the hell we were waiting for!"

He decided he was sick of ground-watching, and turned his attention to his immediate vicinity. His gaze wandered along all the twists, juts and thrusts of branch and vine beneath the sun-blocking leaves.

And all at once he realized he was staring at another of his kind. So still had its dull green-brown body been that he'd taken it for a ripple of bark along a branch.

Carefully, he looked further on. Beyond the small still figure he soon located another like it, and then another. Within a short space of time, he had found three dozen of the insects sitting silently around him in a spherical area barely ten feet in diameter.

ODDLY disconcerted, he once more spread his stiff white wings and fluttered away through the treetops, careful to avoid coming out in direct sunlight this time.

He flew until a resurgence of giddiness told him he was overstraining the creature's stamina. He dropped onto a limb and looked about once more. Within a very short time, he had spotted dozens more of the grasshopper-things. All were the same, sitting in camouflaged silence, steadily eyeing the ground.

"Damn," thought Jerry. "They don't seem interested in eating, mating or fighting. All they want to do is sit—sit and *wait*. But what are they waiting for?"

There was, of course, the possibility that he'd caught them in an

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off-period. If the species were nocturnal, then he wouldn't get any action from them till after sunset. That, he realized gloomily, meant a re-Contact later on. One way or another, he would have to determine the functions, capabilities and menace— if any— of the species with regard to the influx of colonists, who would come to Viridian only if his report pronounced it safe.

Once again, he let the insect's mind take over. Again that overpowering feeling of imminence . . .

He was irritated. It couldn't just be looking forward to nightfall! There were too many things tied in with the imminence feeling: the necessity for quiet, for motionlessness, for careful watching.

The more he thought on it, the more had the distinct intuition that it would sit and stare at the soft, mulch-covered jungle floor, be it bright daylight or blackest gloom, waiting, and waiting, and waiting . . .

Then, suddenly, the slight feel of imminence became almost unbearable apprehension.

The change in intensity was due to a soft, cautious shuffling sound from down in the green-gold twilight. Something was coming through the jungle. Something that moved on careful feet along the springy, moist brown surface below the trees.

Far below, a shadow detached itself slowly from the deeper shadows of the trees, and a form began to emerge into the wan filtered sunlight. It—

An all-encompassing lance of silent white lightning. Contact was over . . .

Jerry sat up on the couch, angry. He pulled the helmet off his head as Bob Ryder leaned out the airlock once more. "How'd it go, sir?"

"Lousy. I'll have to re-establish. Didn't have time to Learn it sufficiently." A slight expression of disappointment on the tech's face made him add, "Don't tell me you have the other tape in place already?"

"Sorry," Bob said. "You usually do a complete Learning in one Contact."

"Oh—" Jerry shrugged and reached for the helmet again. "Never mind, I'll take on the second alien long as it's already set up. I may just have hit the first one in an off-period. The delay in re-Contact may be just what I need to catch it in action."

Settling the helmet snugly on his head once more, he leaned back onto the couch and waited. He heard the tech's feet clanking along the metal plates inside the ship, then the soft clang of an opening door in the power room, and—

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Whiteness, writhing electric whiteness and cold silence. And he was in Contact.

DARKNESS, and musky warmth.

Then a slot of light appeared, a thin fuzzy line of yellow striped with spiky green. Jerry had time, in the brief flicker, to observe thick bearlike forelimbs holding up a squarish trapdoor fastened with cross-twigs for support. Then the powerful forepaws let the door drop back into place, and it was dark again.

He hadn't liked those forepaws. Though thick as and pawed like a bear's, they were devoid of hair. They had skin thin as a caterpillar's, a mottled pink with sick-looking areas of deathly white.

Skin like that would be a push-over to actinic rays for any long exposure. Probably the thing lived underground here, almost permanently. His eyes had detected a rude assortment of thick wooden limbs curving in and out at regular intervals in the vertical wall of soil that was the end of this tunnel, just below the trapdoor. Tree roots. But formed, by some odd natural quirk, into a utile ladder.

But why had the thing peered out, then dropped the door to wait? Did *every* species on this planet hang around expectantly and nothing else? And what was the waiting for?

Then he felt the urge within the creature, the urge to scurry up that ladder into the light. But there was, simultaneously, a counter-urge in the thing, telling it to *please* wait a *little* longer . . .

Jerry recognized the urge by quick anthropomorphosis. It was the goofy urge. The crazy urge. Like one gets on the brinks of awesome heights, or on subway platforms as the train roars in: The impulsive urge to self-destruction, so swiftly frightening and so swiftly suppressed . . .

Yet, it had lifted and dropped that lid too briefly to have *seen* anything outside. Could it be *listening* for something? Carefully, he relinquished his control of the beast, fraction by fraction, to see what it would do.

It rose on tiptoe at once, and again lifted that earthen door.

It squinted at the profusion of green-yellow sunlight that stung its eyes. Then it rose on powerful hind limbs and clambered just high enough on that "ladder" to see over the grassy rim of the trapdoor-hole. Jerry then heard the soft shuffling sound that had re-alerted it, and saw the source.

Out on the matted brown jungle flooring, beneath the towering trees, another of the bear-things was moving forward from an open turf-door, emitting low,

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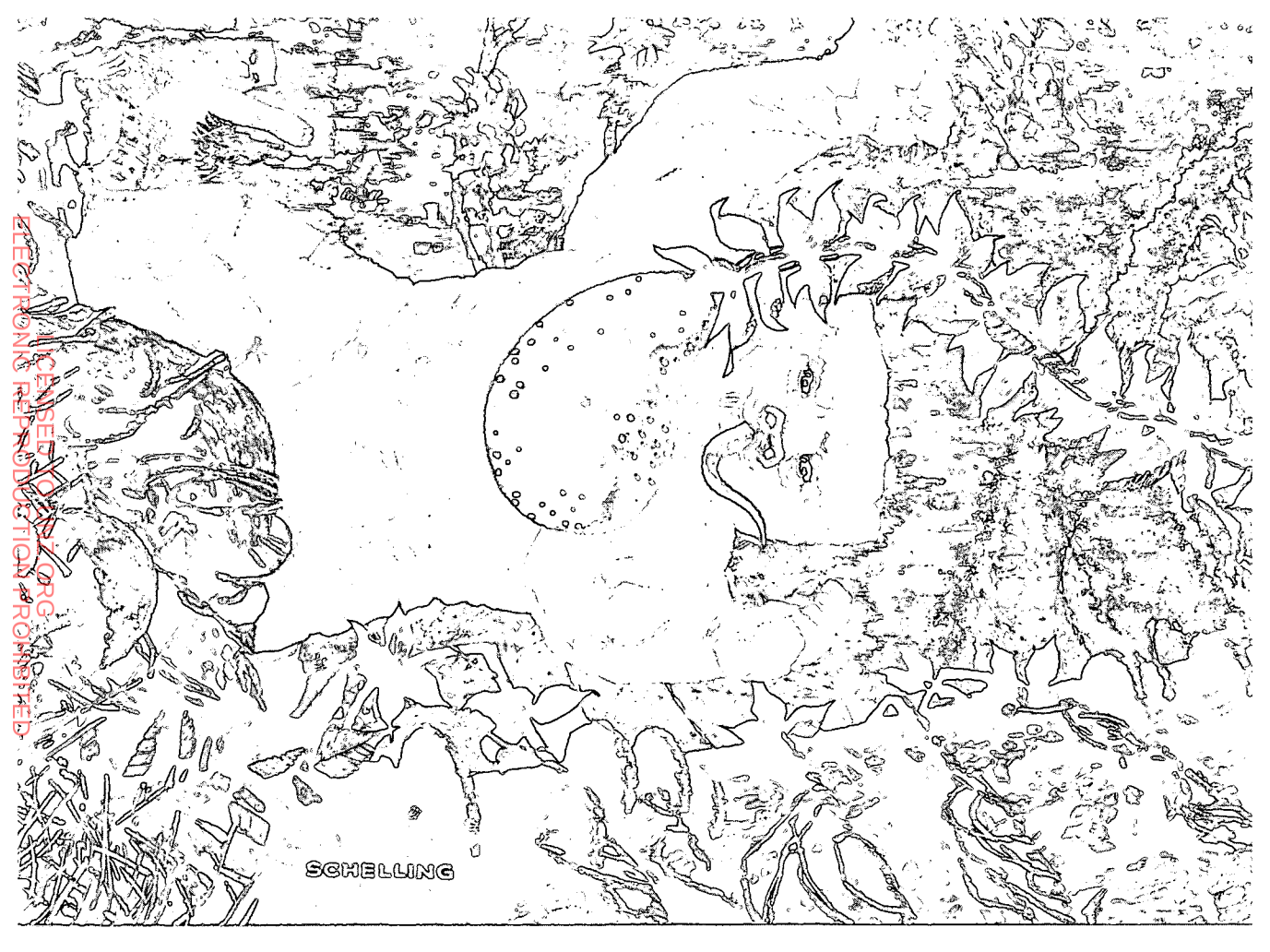

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whimpering snorts as it inched along through the dappling yellow sunlight.

Obviously it was *following* that manic-destruction impulse that he just felt and managed to suppress. It must have been almost a hundred degrees out there. And the damned thing was *shivering*.

HERE and there, Jerry noticed suddenly, other half-opened trapdoors were framing other bear-things' heads. The air was taut with electric tension, the tension of a slow trigger-squeeze that moves millimeter by millimeter toward the instant explosion . . .

The soft shuffling sounds of the animal's movement jogged Jerry's memory then, and he knew it for the sound he had heard when enhosted in the grasshopper-thing. Was a bear-thing what they'd been waiting in the trees so silently for? And what would be the culmination of that vigil?

Then the bear-thing he was in Contact with hitched itself up another root-rung. Jerry saw the thing toward which the quaking creature was headed, in a hunched crawl, its whimpers more anguished by the moment.

Pendant in the green gloaming, about four feet above the spongy brown jungle floor, hung a thick yellow-gray gourd at the tip of a long vine. Its sides glittered stickily with condensed moisture that mingled with the effluvium of the gourd itself. The odor was both noisome and compelling, powerful as a bushel of rotting roses. It sickened as it lured, teased the nostrils as it cloyed within the lungs.

To this dangling obscenity the bear-thing moved. Its eyes were no longer afraid, but glazed and dulled by the strength of that musky lure. Its movements were fluid and trancelike.

It arose on sturdy hind limbs and struck at the gourd with a gentle paw, sending it jouncing to one side on its long green vine. As it bobbed back, the creature struck it off in the opposite direction with a sharper blow.

Jerry watched in fascination. The gourd swung faster; the mottled pink-white alien creature swayed and wove its forelimbs and thick body in a ritual dance matching the tempo of the arcing gourd.

Then Jerry noted that the vine was unlike earth-vines which parasitically employ treetops as their unwilling trellises. It is a limp extension of the tip of a tree branch itself. So were all the other vines in that green matting overhead.

A RIPPING sound yanked his gaze back to the dazed creature and the gourd again.

A ragged tear had riven the

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side of the gourd. Tiny coils of green were dribbling out in batches, like watchsprings spilled from a paper bag. They struck with a bounce and wriggle on the resilient brown mulch. And then, as they straightened themselves, Jerry knew them for what they were: Miniature versions of the grasshopper-things, shaped precisely like the adults, but only a third as large.

The bear-thing's movements had gone from graceful fluidity to frenzy now. A loud whistle of fright escaped it as the last of the twitching green things flopped from its vegetable coccoon, whirred white wings to dry them and flew off.

And the lumbering creature had reason for its fright.

The instant the last coil of wiggly green life was a vanishing blur in the green shadows, a cloud of darker green descended upon the pink form of the beast from the trees.

The grasshopper-things were waiting no longer. Thousands swarmed on the writhing form, until the bear-thing was a lumpy green parody of itself.

As quickly as the cloud had plunged and clustered, it fell away. The earth was teeming with the flip-flopping forms of dying insects, white wings going dark brown and curling like cellophane in open flame. The bear-thing itself was no longer recognizable, its flesh a myriad egg-like white lumps. It swayed in agony for a moment, then toppled.

Instantly the other creatures—his host with them—were racing forward to the site of the encounter. Jerry felt his host's long gummy tongue flick out and snare one—just one—of the dead adult insects. It was ingested whole by a deft backflip of tongue to gullet. As his host turned tail and scurried for the tunnel once more, Jerry swiftly took control again, and halted it to observe any further developments.

EACH of the other things, after a one-insect gulp, was just vanishing back underground. The turf-tops were dropping neatly into almost undetectable place hiding the tunnels. The sunlight nipped at his pale flesh, but Jerry held off from a return to the underground sanctuary, still watching that lump-covered corpse on the earth. Then . . .

The vine, its burden gone, began to drip a thick ichor from its ragged end upon the dead animal beneath it.

And as the ichor touched upon a white lump, the lump would swell, wriggle, and change color. Jerry watched with awe as the color became a mottled pink, and the surface of the lumps cracked and shriveled away, and tiny

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forms plopped out onto the ground: miniature bear-things, tiny throats emitting eager mouse-squeaks of hunger.

They rushed upon the body in which they'd been so violently incubated and swiftly, systematically devoured it, blood, bone and sinew.

And when not even a memory of the dead beast was left upon the soil, the tiny pink-white things began to burrow downward into the ground. Soon there was nothing left in the area but a dried fragment of vine, a few loose mounds of soil and a vast silence.

"I'll be a monkey's uncle!" said Jerry . . . forgetting in his excitement that this phrase was nearly a concise parody of the Space Zoologists' final oath of duty, and kiddingly used as such by the older members of the group.

The whole damned planet was symbiotic! After witnessing those alien life-death rites, it didn't take him long to figure out the screwball connections between the species. Insects, once born of vine-gourds and fully grown, then propagated their species by a strange means: laying bear-eggs in a bear-thing and dying. And dying, eaten by the surviving bears, they turned to seeds which —left in the tunnels by the bear-things as droppings— in turn took root and became trees.

And the trees, under the onslaught of another bear-thing on a dangling pod, would produce new insects, then drip its ichor to fertilize the eggs in the newly dead bear-thing . . .

Jerry found his mind tangling as he attempted a better pinpointing of the plant-animal-insect relationship. A dead adult insect, plus a trip through a bear-thing's alimentary canal, produced a tree. A tree-pod, with the swatting stimulus of a bear-thing's paws, gave birth to new insects. And insect eggs in animal flesh, stimulated by the tree-ichor, gestated swiftly into young animals . . .

That meant, simply, that insect plus bear equals tree, tree plus bear equals insect, and insect plus tree equals bear. With three systems, each relied on the non-inclusive member for the breeding-ground. Insect-plus-ichor produced small animals *in* the animal flesh. Dead-insect-plus-bear produced tree *in* the tree-flesh (if one considered dead tree leaves and bark and such as the makeup of the soil.) Bear-swats-plus-tree produced insects . . . "Damn," said Jerry to himself, "but *not* in the insect-flesh. The thing won't round off . . ."

He tried again, thinking hard. In effect, the trees were parents to the insects, insects parents to the bears, and bears parents to the trees . . . Though in another

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sense, bear-flesh gave birth to new bears, digested insects gave birth (through the tree-medium) to new insects, and trees (through the insect-medium) gave birth to new trees . . .

Jerry's head spun pleasantly as he tried vainly to solve the confusion. Men of science, he realized, would spend decades trying to figure out which species were responsible for which. It made the ancient chicken-or-egg question beneath consideration. And a lot of diehard evolutionists were going to be bedded down with severe migraines when his report went into circulation . . .

A dazzle of silent lightning, and Contact was over.

"READY with that first tape again," Bob Ryder said as Jerry removed the Contact helmet and brushed his snow-white hair back from his tanned, youthful face. "Or do you want a breather first?"

Jerry shook his head. "I won't need to re-Contact that other species, Ensign. I got its life-relation ships from the second Contact."

"Really, sir?" said Bob. "That's pretty unusual, isn't it?"

"The whole damned planet's unusual," said Jerry, rising from his supine position and stretching luxuriously in the warm jungle air. "You'll see what I mean when you process the second tape."

Bob decided that Jerry—running pretty true to form for a Space Zoologist—wasn't in a particularly talkative mood, so he had to satisfy himself with waiting for the transcription of the Contact to get the details.

Later that day, an hour after takeoff, with Viridian already vanished behind them as the great ship plowed through hyperspace toward Earth and home, Bob finished reading the report. Then he went down the passageway to the ward room for coffee. Jerry was seated there already. Bob, quickly filling a mug from the polished percolator, slid into a seat across the table from his superior and asked the question that had been bugging him since seeing the report.

"Sir— on that second Contact. Has it occurred to you that you'd relinquished control to the host *before* you saw that other creature move out and start swatting the gourd-thing?"

"You mean was I taking a chance on being destroyed in the host if the creature I was Contacting gave in to the urge to do the swatting?"

"Yes, sir," said Bob. "I mean, I know you can take control any time, if things get dangerous. But wasn't that cutting it kind of thin?"

Jerry shook his head and sipped his coffee. "Wrong urge, En-

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sign. You'll note I recognized it as the *goofy* urge, the impulse to die followed instantly by a violent surge of self-preservation. It wasn't the death-wish at all. Myself and the creatures who remained safely at the tunnel-mouths had a milder form of what was affecting the creature that *did* start swatting the gourd."

"Then what was the difference, sir? Why did that one particular creature get the full self-destruction urge and no other?"

Jerry wrinkled his face in thought. "I wish I didn't suspect the answer to that, Ensign. The only thing I hope it *isn't* is the thing I have the strongest inkling it *is:* Rotation. Something in their biology has set them up in a certain order for destruction. And that rite I saw performed was so un-animal, so formalized—"

Bob's eyes widened as he caught the inference. "You think they have an inbuilt protocol? That if one particular creature missed its cue, somehow, the designated subsequent creature would simply wait forever, never jumping its turn?"

"That's what I mean," nodded Jerry. "I hope I'm wrong."

"But the right creature made it," said Bob, blinking. "We can't have upset the ecology, can we?"

"Things develop fast on Viridian," mused Jerry. "If I figure the time-relationship between their egg-hatching rate and growth rate, those trees must mature in growth in about a month. And we managed to shrivel a half dozen vines with our rocket fires when we landed, and probably that many again when we blasted off . . ."

"We dropped CO_2 bombs after we cleared the trees," offered the tech, uneasily. "The fire was out in seconds."

"That wouldn't help an already-shriveled vine, though, now would it!" sighed Jerry. "And if my hunch about protocol is correct—"

"The life-cycle would interrupt?" gasped the tech.

"We'll see," said Jerry. "It'll take us a month to get back, and there'll be another six months before the first wave of engineers is sent to begin the homesteads and industry sites. We'll see, Ensign."

IT took two months for the engineers to go out and return.

They hadn't landed. A few orbits about the planet had shown them nothing but a vast dead ball of dust and rotted vegetation, totally unfit for human habitation. They brought back photographs taken of the dead planet that no longer deserved the name it had rated in life.

But Jerry Norcriss, Space Zoologist, made it a special point to avoid looking at any of them.

— JACK SHARKEY

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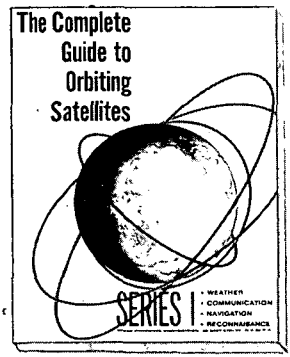

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Howard Chandler Christy: The Lovely Young Girl

Doctors hear everyone's secrets. Sometimes they're not pleasant — and the worst may be their own!

By FREDERIK POHL

THREE PORTRAITS AND A PRAYER

WHEN Dr. Rhine Cooperstock was put under my care I was enlarged with pride. Dr. Cooperstock was a hero to me. I don't mean a George Washington, all virtue and no fire, I mean he was a dragon killer. He had carried human knowledge far into the tiny spaces of an atomic nucleus. He was a very great man. And I was his doctor and he was dying.

Dr. Cooperstock was dying in the finest suite in the Morgan Pavilion and with all the best doctors. (I am not modest.) We couldn't keep him alive for more than a matter of months, and we couldn't cure him at all. But we could make him comfortable. If round-the-clock nurses and color television constitute comfort.

I don't ask you to understand technical medical terms. He was an old man, his blood vessels deteriorating, and clots formed, impeding the circulation. One day a clot would form in heart, brain or lungs and he would die. If it was in the lung it would be painful and slow. In the heart, painful and fast. In the brain most painful of all, but so fast that it would be a mercy.

Meanwhile we fed him heparin and sometimes coumarol and attempted by massages and heat

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and diet to stave off the end. Although, in fact, he was all but dead anyway, so little freedom of movement we allowed him.

"Martin, the leg hurts. You'd better leave a pill," he would say to me once or twice a week, and I would hesitate. "I don't know if I can make it to the bathroom tonight, Martin," he would say, his tone cheerfully resigned. Then he would call for the bedpan while I was there, or mention casually that some invisible wrinkle in the sheet caused him pain and stand by bravely while the bed was remade, and say at last, self-deprecating, "I think I will need that pill, Martin." So I would allow myself to be persuaded and let him have a red-and-white capsule and in the morning it would be gone. I never told him that they contained only aspirin and he never admitted to me that he did not take the pills at all but was laboriously building up a hoard against the day when the pain would be really serious and he would take them all at once.

Dr. Cooperstock knew the lethal dose as well as I did. As he knew the names of all his veins and arteries and the chemistry of his disease. A man like Rhine Cooperstock, even at seventy, can learn enough medicine for that in a week.

He acquired eleven of the little capsules in one month at the Pavilion; I know, because I counted them after he left. That would have been enough for suicide, if they had not been aspirin. I suppose he would have stopped there, perhaps beginning to take a few, now and then, both to keep me from getting suspicious and for the relief of the real pain he must have felt. But he did leave. Nan Halloran came and got him.

She invaded the Pavilion like a queen. Expensive, celebrated hospital, we were used to the famous; but this was Nan Halloran, blue-eyed, black-haired, a face like a lovely child and a voice like the sway of hips. She was a most remarkable woman. I called her a queen, but she was not that, she was a goddess, virgin and fertile. I speak subjectively, of course, for in medical fact she was surely not one and may not have been either. She breezed into the room, wrinkling her nose. "Coopie," she said, "What is that awful smell? Will you do me a favor, dear? I need it very much."

You would not think that a man like Dr. Cooperstock would have much to do with a television star; but he knew her; years before, when he was still teaching sometimes, she had somehow wandered into his class. "Hello, Nan," he said, looking quite astonished and pleased. "I'll do anything I can for you, of course. That smell," he apologized, touch-

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ing the leg with its bright spots of color and degenerated tissues, "is me."

"Poor Coopie." She looked around at me and smiled. Although I am fat and not attractive and know in my heart that, whatever long-term wonders I may work with the brilliance of my mind and the cleverness of my speech, no woman will ever lust for me on sight, I tingled. I looked away. She said sweetly, "It's about that fusion power thing, Coopie. You know Wayne Donner, of course? He and I are good friends. He has these utility company interests, and he wants to convert them to fusion power, and I told him you were the only man who could help him."

Dr. Cooperstock began to laugh, and laughed until he was choking and gagging. I laughed too, although I think that in all the world Dr. Cooperstock and I must be two of the very few men who would laugh at the name of Wayne Donner. "Nan," he said when he could, "you're amazing. It's utterly impossible, I'm afraid."

SHE sat on the edge of his bed with a rustle of petticoats. She had lovely legs. "Oh, did that hurt you? But I didn't even touch your leg, dear. Would you please get up and come now, because the driver's waiting?"

"Nan!" he cried. "Security regulations. Death. Lack of proper engineering! Did you ever think of any of those things? And they're only a beginning."

"If you're going to make objections we'll be here all day, darling. As far as security is concerned," she said, "this is for the peaceful use of atomic power, isn't it? I promise you that Wayne has enough friends in the Senate that there will be no problem. And the engineering's all right, because Wayne has all those people already, of course. This isn't any little Manhattan Project, honey. Wayne spends *money*."

Dr. Cooperstock shook his head and, although he was smiling, he was interested, too. "What about death, Nan?" he said gently.

"Oh, I know, Coopie. It's terrible. But you can't lick this thing. So won't you do it for me? Wayne only needs you for a few weeks and he already talked to some doctors. They said it would be all right."

"Miss Halloran," I said. I admit I was furious. "Dr. Cooperstock is my patient. As long as that is so, I will decide what is or is not all right."

She looked at me again, sweetly and attentively.

I have now and had then no doubt at all; I was absolutely right in my position. Yet I felt as though I had committed the act of a clumsy fool. She was clean

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and lovely, her neck so slim that the dress she wore seemed too large for her, like an adorable child's. She was no child; I knew that she had had a hundred lovers because everyone knows that, even doctors who are fat and a little ugly and take it all out in intelligence. Yet she possessed an innocence I could not withstand. I wanted to take her sweetly by the hand and shelter her, and walk with her beside a brook and then that night crush her and caress her again and again with such violence and snorting passion that she would Awaken and then, with growing abandon, Respond. I did know it was all foolishness. I did. But when she mentioned the names of five or six doctors on Donner's payroll who would care for Dr. Cooperstock and suggested like a child that with them in charge it would really be all right, I agreed. I even apologized. Truth to tell, they were excellent men, those doctors. But if she had named six chiropractors and an unfrocked abortionist I still would have shrugged and shuffled and stammered, "Oh, well, I suppose, Miss Halloran, yes, it will be all right."

So we called the nurses in and very carefully dressed the old man and wheeled him out into the hall. I said something else that was foolish in the elevator. I said, because I had assumed that it was so, that she probably had a cab waiting and a cab would not do to transport a man as sick as Dr. Cooperstock. But she had been more sure of herself than that. The driver who was waiting was at the wheel of a private ambulance.

A TIME cover,
attributed to Artzybasheff,
with mosaic of dollar signs.

I DID not again hear of Dr. Cooperstock for five weeks. Then I was telephoned to come and get him, for he was ready to return to the Pavilion to die. It was Wayne Donner himself who called me.

I agreed to come to one of Donner's New York offices to meet him, for in truth I was curious. I knew all about him, of course — rather, I knew as much as he wished anyone to know. I have seen enough of the world's household names in the Pavilion to know what their public relations men can do. The facts that were on record about Wayne Donner were that he was very rich. He had gone from a lucky strike in oil and the twenty-seven and a half per cent depletion allowance to aluminum. And thence to electric power. He was almost the wealthiest man in the world, and I know his secret.

He could afford anything, any-

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thing at all, because he had schooled himself to purchase only bargains. For example, I knew that he was Nan Halloran's lover and, although I do not know her price, I know that it was what he was willing to pay. Otherwise he would have given her that thin, bright smile that meant the parley was over, there would be no contract signed that day, and gone on to another incredible beauty more modest in her bargaining. Donner allowed himself to want only what he could get. I think he was the only terrible man I have ever seen. And he had nearly been President of the United States! Except that Governor Hewlett of Ohio spoke so honestly and so truthfully about him in the primaries that not all of Donner's newspapers could get him the vote; what was terrible was not that he then destroyed Hewlett, but that Hewlett was not destroyed for revenge. Donner hated too deeply to be satisfied with revenge, I think; he was too contemptuous of his enemies to trouble to crush them. He would not give them that satisfaction. Hewlett was blotted out only incidentally. Because Donner's papers had built the campaign against him to such a pitch that it was actually selling papers, and thus it was profitable to go on to ruin the man. When I saw Donner he had Hewlett's picture framed in gilt in his waiting room. I wondered how many of his visitors understood the message. For that matter I wondered how many needed it.

When I was admitted, Dr. Cooperstock was on a relaxing couch. "Hello, Martin," he said over the little drone of its motor. "This is Wayne Donner. Dr. Finneman. Dr. Grace."

I shook hands with the doctors first, pettishly enough but I felt obliged to show where I stood, and then with Donner. He was very courteous. He had discovered what bargains could be bought with that coin too. He said, "Dr. Finneman here has a good deal of respect for you, Doctor. I'm sure you're well placed at the Pavilion. But if you ever consider leaving I'd like to talk to you."

I thanked him and refused. I was flattered, though. I thought of how his fusion-power nonsense might have killed Dr. Cooperstock before he was ready to die, and I thought of him with Nan Halloran, sweat on that perfect face. And I am not impressed by money.

Yet I was flattered that he would take the trouble and time, and God knows how much an hour of his time was worth, to himself offer me a job. I was flattered even though I knew that the courtesy was for his benefit, not mine. He wanted the best he

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chose to afford — in the way of a doctor, in my case, but the best of anything else too. If he hired a gardener he would want the man to be a very good gardener. Aware as he was of the dignities assumed by a professional man, he had budgeted the time to give me a personal invitation instead of letting his housekeeper or general manager attend to it. It was only another installment of expense he chose to afford and yet I was glad to get out of there. I was almost afraid I would reconsider and say yes, and I hated that man very much.

WHEN we got Dr. Cooperstock back and bedded and checked over I examined the records Dr. Finneman had sent. He had furnished complete tests and a politely guarded prognosis, and of course he was right; Cooperstock was sinking, but not fast; he was good for another month or two with luck. I told him as much, snappishly. "Don't be angry with me, Martin," he said, "you'd have done the same thing for Nan if she asked you."

"Probably, but I'm not dying."

"Don't be vulgar, Martin."

"I'm not a nuclear physicist, either."

"It's only to make a few dollars for the man, Martin. Heavens. What difference can another billion or two make to Donner? Besides," he said strongly, "you know I've always opposed this fetish of security. Think of Oppenheimer, not allowed to read his own papers! Think of the waste, the same work done in a dozen different places, because in Irkutsk they aren't allowed to know what's going on in Denver and in Omaha somebody forgot to tell them."

"Think of Wayne Donner with all the power in the world," I said.

He said, "I guess Nan hit you harder than I thought, to make you so mad."

Although I watched the papers I did not see anything about converting Donner's power stations to fusion energy. In fact, I didn't see much of Donner's name at all, which caused me to wonder. Normally he would have been spotted in the Stork or cruising off Bimini or in some other way photographed and written about a couple of times a week. His publicity men must have been laboring extra hard.

Nan Halloran came to see Dr. Cooperstock but I did not join them. I spent my time with him when there was no one else, after my evening rounds. Sometimes we played cards but more often I listened to him talk. The physics of the atomic nucleus was poetry when he talked of it. He told me about Gamow's primordial atom from which all the stars and dust

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clouds had exploded. He explained Fred Hoyle to me, and Heisenberg. But he was tiring early now.

Behind the drawer of his night table, in a used cigarette package thumbtacked to the wood, his store of red-and-white capsules was growing again. They were still aspirin. But I think I would not have denied him the real thing if he had known the deception and asked. We took off two toes in March and it was only a miracle that we saved the leg.

By Gilbert Stuart.
His late period.
Size 9' x 5'; heroic.

IN THE beginning of May newspaper stories again began to appear about Donner, but I could not understand them. The stories were datelined Washington. Donner was reported in top-level conferences, deeply classified. There were no leaks, no one knew what the talks were about. But the presidential press secretary was irritable with the reporters who asked questions, and the cabinet members were either visibly worried or visibly under orders to keep their mouths shut. *And* worried. I showed one or two of the stories to Dr. Cooperstock, but he was too tired to guess at implications.

He was hanging on, but it would not be for long. Any night I expected the call from his nurses, and we would not be able to save him again.

Then I was called to my office. I was lecturing to fourth-year men when the annunciator spoke my name; and when I got to my office Governor Hewlett was there.

"I need to see Dr. Cooperstock," he said. "I'm afraid it may excite him. The resident thought you should be present."

I said, "I suppose you know that any shock may kill him. I hope it's important."

"It is important. Yes." The Governor limped ahead of me to the elevator, his bald head gleaming, smiling at the nurses with his bad teeth and his wonderful eyes. Dr. Cooperstock was a hero to me. Governor Hewlett was something less, perhaps a saint or a martyr. He was what St. George would have been if in the battle he had been killed as well as the dragon; Hewlett had spent himself against Donner in the campaign and now he lingered on to serve out his punishment for his daring, the weasels always chipping away at him, a constant witness before commissions and committees with slanders thick in the air, a subject for jokes and political cartoons. A few senators and others of his own party still listened to him, but they could not save him from the committees.

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The Governor did not waste words. "Dr. Cooperstock, what have you done? What is Wayne Donner up to?"

Cooperstock had been dozing. Elaborately he sat up. "I don't see, sir, that it is — "

"Will you answer me, please? I'm afraid this is quite serious. The Secretary of Defense, who was with me in the House fifteen years ago, told me something I did not suspect. Do you know that he may be asked to resign and that Wayne Donner may get his job?"

Dr. Cooperstock said angrily, "That's nonsense. Donner's just a businesman now. Anyway, what conceivable difference can — "

"It makes a difference, Dr. Cooperstock, because the rest of the cabinet is to be changed around at the same time. Every post of importance is to go to a man of Donner's. You recall that he wanted to be President. Perhaps this time he does not want to bother with a vote. What weapon have you given him to make him so strong, Dr. Cooperstock?"

"Weapon? Weapon?" Cooperstock stopped and began to gasp, lying back on his pillow, but he thrust me away when I came to him. "I didn't give him any weapon," he said thoughtfully, after staring at the Governor's face for a moment, forcing his lungs to work more easily. "At least, I don't think I did. It was only a commercial matter. You see, Governor, I have never believed in over-classification. Knowledge should be free. The basic theory — "

"Donner doesn't intend to make it free, Dr. Cooperstock, he plans to keep it for himself. Please tell me what you know."

"WELL, it's fusion power," Cooperstock said.

"The hydrogen bomb?"

"Oh, for God's sake, Governor! It is fusion of hydrogen, yes, but not in any sense a bomb. The self-supporting reaction takes place in a magnetic bottle. It will not explode, even if the bottle fails; you would have to coax it to make it blow up. Only heat comes out, with which Donner is going to drive steam generators, perfectly normal. I assure you there is no danger of accident."

"I was not thinking of an accident," said the Governor after a moment.

"Well — In that event — I mean, it is true," said Cooperstock with some difficulty, "that, yes, as the reactor is set up, it would be possible to remove the safeguards. This is only the pilot model. The thing *could* be done."

"By remote control, as I understand," said Hewlett wearily. "And in that event each of Don-

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ner's power stations would become a hydrogen bomb. Did you know that he has twenty-four of them under construction, all over the nation?'

Cooperstock said indignantly. "He could not possibly have twenty-four installations completed in this time. I can hardly believe he has even one! In the New York plant on the river we designed only the fusion chamber itself. The hardware involved in generating power will take months."

"But I don't think he bothered with the hardware for generating power, you see," said the Governor.

Dr. Cooperstock began to gasp again. The Governor sat watching him for a moment, his face sagging with a painful fatigue, and then he roused himself and said at last, "Well, you shouldn't have done this, Dr. Cooperstock, but God bless you, you're a great man. We all owe you a debt. Only we'll have to do something about this now."

In my office the Governor took me aside. "I am sorry to have disturbed your patient. But it was important, as you see."

"Donner is a terrible man."

"Yes, I think that describes him. Well. It's all up to us now," said the Governor, looking very gray. "I confess I don't know what we can do."

"Surely the government can handle — "

"Doctor," he said, "I apologize for troubling you with my reflections, I've not much chance to talk them out with anyone, but I assure you I have thought of everything the government can do. Donner has eight oil senators in his pocket, you know. They would be delighted to filibuster any legislation. For more direct action, I'm afraid we can't get what we need without a greater risk than I can lightly contemplate. Donner has threatened to blow up every city of over eight hundred thousand, you see. I now find that this threat is not empty. Thank you, Doctor," he said, getting up. "I hope I haven't distressed your patient as much as he has distressed me."

He limped to the door, shook hands and was gone.

Half an hour later it was time for my rounds. I had spent the time sitting, doing nothing, almost not even thinking.

But I managed to go around, and then Dr. Cooperstock's nurse signaled me. He had asked her to phone Nan Halloran for him, and should she do it? There was a message: "I have something else for Wayne."

I FOUND that puzzling but, as you will understand, I was in an emotionally numb state; it was

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difficult to guess at what it meant. I told the nurse she could transmit the message. But when Nan Halloran arrived, an hour or two later, I waited in the hall outside Dr. Cooperstock's room until she came out.

"Why, Doctor," she said, looking very lovely.

I took her by the arm. It was the first time I had touched that flesh, we had not even shaken hands before; I took her to my office. She seemed eager to go along with me. She asked no questions.

In the office, the door closed, I was extremely conscious of being alone in a room with her. She knew that, of course. She took a cigarette out of her purse, sat down and crossed her legs. Gallant, I stumbled to my desk and found a match to light her cigarette.

"You've been worrying Coopie," she said reproachfully. "You and that Hewlett. Can't he stay out of a simple business matter?"

She surprised me; it was such a foolish thing to say and she was not foolish. I told her very briefly what Hewlett had said. No one had told me to be silent. She touched my hand, laughing. "Would it make so very much difference . . . Martin? (May I?) Donner's not a monster."

"I don't know that."

She said impishly, "I do. He's a man like other men, Martin. And really he's not so young, even with all the treatments. What would you give him, with all his treatments? Twenty more years, tops?"

"A dictatorship even for twenty minutes is an evil thing, Miss Halloran," I said, wondering if I had always sounded so completely pompous.

"Oh, but bad words don't make bad things. Sakes! Think what they could call *me*, dear! Donner's only throwing his weight around, and doesn't everyone? As much weight as he has?"

"Treason — " I began, but she hardly let me get even the one word out.

"No bad words, Martin. You'd be astonished if you knew what wonderful things Wayne wants to do. It takes a man like him to take care of some problems. He'll get rid of slums, juvenile delinquents, gangsters . . ."

"Some problems are better not solved. Hitler solved the Jewish question in Europe."

She said sweetly, "I respect you, Martin. So does Wayne. You have no idea how much he and Dr. Cooperstock think of you, and so do I, so please don't do anything impulsive."

She walked out the room and left it very empty.

I felt turgid, drained and a little bit stupid. I had never wanted

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anything as much as I had wanted her.

It was several minutes before I began to wonder why she had taken the trouble to entice me in a pointless conversation. I knew that Nan Halloran was her own bank account, spent as thriftily as Donner's billions. I wondered what it was that I had had that she was willing to purchase with the small change of a few words and a glimpse of her knees and the scent of her perfume.

Before I had quite come to puzzle the question through, while I was still regretting I had had no higher-priced commodity for her, my phone rang. It was Dr. Cooperstock's nurse, hysterical.

Nan Halloran's conversation had not been pointless. While we were talking two ambulance attendants had come to assist Dr. Cooperstock into a wheelchair, and he was gone.

To Whom
all things concern

ON THE fourth of May Dr. Cooperstock defected and in the morning of the fifth Governor Hewlett telephoned me. "He's not back?" he said, and I said he wasn't, and Hewlett, pausing only a second, said, "Well. We can't wait any longer. The Army is moving in."

I went from my office to the operating room and I was shaking as I scrubbed in.

It was a splenectomy, but the woman was grossly fat, with a mild myocarditis that required external circulation. It took all of my attention, for which I was grateful. We were five hours in the room, but it was successful and it was not until I was smoking a cigarette in the little O.R. lounge that I began to shake.

Twenty-four nuclear bombs in twenty-four cities. And of course one of them, the one that we knew was ready to go off, was in the city I was in. I remembered the power plant, off in the Hudson River under the bridge, yellow brick and green glass. It was not more than a mile away.

And yet I was alive. The city was not destroyed. There had been no awful blast of heat and concussion.

I walked into the recovery room to look at the splenectomy. She was all right, but the nurse stared at me, so I went back to my office, realizing that I was crying.

And Nan Halloran was there waiting for me, looking like a drunken doll.

She pulled herself together as I came in. Her lipstick was smeared, and she shook. "You win, Martin," she said, with a little laugh. "Who would have

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thought old Coopie was such a lion? He gave me something for you."

I poured her a drink. "What happened?"

"Oh," said she. She drank the whiskey, politely enough, but showing she needed it. "Coopie came to Wayne and made a deal. Politics, he said, is out of my line, but you owe me something, I've helped you, I'll help you more, only you must promise that research will be free and well endowed. He had it very carefully worked out, the man is a genius." She giggled and held out her glass. "Funny. Of course he's a genius. So Wayne took the hook and said it was a deal, what was Coopie going to do for him next? And Coopie offered to show him how to convert the power plant to a different kind of bomb. Neutrons, he said." So Dr. Cooperstock had taken the billionaire down into the guarded room and, explaining how it was possible to change the type of nuclear reaction from a simple hot explosion to a cold, killing flood of rays that would leave the city unharmed, if dead, he had diverted the hydrogen fuel supply, starved the reaction and shut off the magnetic field that contained it.

And then he had told Donner all deals were off.

There was nothing hard about rebuilding the field and restarting the reaction, of course. It only took a few days; but Donner no longer had days. "I told Wayne," said Nan Halloran gravely, draining her glass, "I told him he should wait until he had all the bombs ready, but he's — he was — he's still, but I think not for long, hard-headed. I have to go now, my plump friend, and I do thank you for the drink. I believe they're going to arrest me." She got up and picked up her white gloves, and at the door she paused and said, "Did I tell you? I've got so many things on my mind. Coopie's dead. He wouldn't let Wayne's doctors touch him."

THEY did arrest her, of course. But by and by, everything calming down, they let her go again. She's even starring in the movies again, you can see her whenever you like. I've never gone.

The letter in the envelope was from Dr. Cooperstock and it said:

> I've pulled their fuses, Martin, for you and the Governor, and if it kills me, as you should know it must, please don't think that I mind dying. Or that I am afraid to live, either. This is not suicide. Though I confess that I cannot choose between the fear of living in this world and the fear of what may lie beyond it.
>
> The leg is very bad. You would

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not even let me wear elastic socks, and for the past hour I have been crawling around the inside of Donner's stainless-steel plumbing. It was really a job for a younger man, but I couldn't find one in time.

So I suppose these are my last words, and I wish I could make them meaningful. I expect there is a meaning to this. Science, as one of my predecessors once said — Teller, was it? — has become simpler and more beautiful. And surely it has become more wonderful and strange. If gravity itself grows old and thin, so that the straggling galaxies themselves weaken as they clutch each other, it seems somehow a much lesser thing that we too should grow feeble. Yet I do hate it. I am able to bear it at all, indeed, only through a Hope which I never dared confess even to you, Martin, before this.

When I was young I went to church and dreaded dying for the fear of hellfire. When I was older I dreaded nothing; and when I was older still I began to dread again. The hours, my friends, in which I held imaginary conversations with the God I denied — proving to Him, Martin, that He did not exist — were endless. And then, past Jehovah and prophets, I found another God, harsher, more awful and more remote. I could not pray to Him, Creator of the Big Bang, He Who Came Before the Monobloc. But I could fear Him.

Now I am not afraid of Him. A galaxy twenty billion years old has given me courage. If there was no monobloc there can have been no God Who made it. I live in the hope of the glorious steady state!

It was weak and wicked of me to give Donner a gun to point at the world, therefore, and I expect it is fair if I die taking it back; but it is not to save the world that I do it but to save my own soul in the galaxies yet to be born. For if the steady state is true there is no end to time. And infinity is not bounded, in any way. Everything must happen in infinity. Everything must happen . . . an infinity of times.

So Martin, in those times to come, when these atoms that compose us come together again, under what cis-Andromedan star I cannot imagine, we will meet — if there is infinity it is sure — and I can hope. In that day may we be put together more cleanly, Martin. And may we meet again, all of us, in shapes of pleasing strength and health, members of a race that is, I pray, a little wiser and more kind.

That was the letter from Dr. Rhine Cooperstock. I folded it away. I called my secretary on the intercom to tell her that his suite would now be free for another patient; and I went out into the spring day, to the great black headlines with Donner's name over all the papers and to the life that Cooperstock had given back to us all. — **FREDERIK POHL**

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always a qurono

You too can be a Qurono. All you need do is geoplanct. All you need know is when to stop!

By JIM HARMON **Illustrated by RITTER**

BARNHART sauntered right into the middle of them. He covertly watched the crew close in around him and he never twitched an eyelash. *Officers must never panic*, he reminded himself, and manipulated the morning sighting on the nearest sun through the Fitzgerald lens. It was exactly 900:25:30, Galactic Time.

He jotted the reading in, satisfied. The warm breath tickling the back of his neck was unnerving. If he showed fear and grabbed a blaster from the locker he could probably control them, but he was devastingly aware that a captain must never show fear.

"Captain Barnhart," Simmons, the mate, drawled politely, "do you still plan on making the jump at 900 thirty?"

The captain removed his eyeglasses and polished the lenses.

"Simmons," he said in comforting, confiding tones, "you are well aware that regulations clearly

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state that a spaceship that phases in on a star in major trans-spot activity is required to re-phase within twenty-four hours to avoid being caught in turbulence."

"Yes, sir," Simmons said. "But, as I have stated before, it is my belief that regulation means that a ship should phase to avoid the *possibility* of being caught in an energy storm. We landed right in the middle of one. As you are aware, sir, if we phase now there is an excellent chance we will warp right into the sun!"

Barnhart shook his lean, bronze head wearily. "Simmons, the Admiralty has gone through this thousands of times. Obviously they know our danger is greater by staying where we are. Why, Ignatz 6Y out there may *nova*! We'll have to take our chances."

"No, sir." Simmons thrust his pale, blue-veined jaw at him, his light eyes Nordicly cold below a blond cropping. "The storm spots are dying down. We aren't phasing yet."

Barnhart drew himself up and looked down at the mate. Behind Simmons, York moved closer. The captain was suddenly aware of York's low forehead and muscular, free-swinging arms. It was probably sheer bias, but he had frequently entertained the idea that Englishmen were closer to our apelike ancestor than most people . . . the way they ran around painted blue when everybody was civilly wearing clothes and all. Obviously York was incapable of thinking for himself and was willing to do anything Simmons commanded him to do.

It became transparent to Barnhart that they were going to mutiny to avoid following their duty as clearly outlined in regulations. Judging from York's twitching knuckles, they were going to resist by strangling him.

Barnhart wondered if this was the time to show fear and unlock a weapon to defend himself.

York clamped onto him before he could decide on the proper interpretation of the regulations and just as his mind settled on the irresolvable question: If a captain must never show fear, why was he given the key to a hand weapons locker to use when in fear of his life?

BARNHART gazed around the purple clearing with clouded eyes. He trembled in near traumatic shook. It was almost too much to bear.

Regulations clearly stated that no officer was to be *marooned* on a .9 Earth-type planet at fourteen-forty Galactic Time, early evening local.

Or (he brushed at his forehead) he was damned certain they at least strongly *implied* it.

But fear was such a foreign ele-

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ment to his daily routine he discarded it.

The scene took him back to his boyhood.

He sorted out the survival supplies, lifting even the portable nuclear generator effortlessly under the .67 gravity, and remembered how he used to go camping regularly every month when he was a Boy Scout. He had been a bookish child, too obsessed with reading, they told him. So he had put himself on a regular schedule for play. Still, it never seemed to make people like him much better. After he established his routine he didn't try to change it — he probably couldn't make things better and he certainly couldn't stand them any worse.

Barnhart paused in his labors and stripped off his soaked uniform shirt, deciding to break out his fatigues. As the wet sleeve turned wrong side out he noticed his wristwatch showed fifteen hundred hours.

As usual he fetched his toothbrush from the personals kit and started to scrub his teeth.

This was when he saw his first qurono in the act of geoplancting.

It a deeply disturbing experience.

BARNHART and the lank, slick-bodied alien ignored each other every morning while the marooned captain had his coffee and the native chronoped; each afternoon while Barnhart laid down for a nap and the other xenogutted; and of course before retiring while Barnhart brushed his teeth and the alien did his regular stint of geoplancting.

The captain sat about arranging living quarters on the planet. The crew of the *Quincey* had provided him with every necessity except communications gear. Still he was confident he would find a way back and see that Simmons and the rest got the punishment clearly called for in Regulation C-79, Clause II.

This driving need to have the regulation obeyed was as close as he could get to anger.

His lot was a rough and primitive one, but he sat down to doing the best with things that he could. Using the nuclear reactor, he synthesized a crude seven-room cottage. He employed an unorthodox three-story architecture. This gave him a kind of observation tower from which he could watch to see if the natives started to get restless. Traditionally, this would be a bad sign.

Humming to himself, he was idly adding some rococo work around the front door when thirteen-hundred-thirty came up and he stopped for his nap. At the edge of the now somewhat larger clearing the alien was xenogutting in the indigo shadows of a droop-

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ing bush-tree. Since he hadn't furnished the house yet, Barnhart stretched out on the grass. Suddenly he sat upright and shot a glance at the alien. Could this sort of thing be regarded as restless activity?

He was safe so long as the aliens maintained their regular routine but if they started to deviate from it he was in trouble.

He tossed around on the velvet blades for some minutes.

He got to his feet.

The nap would have to be bypassed. As much as he resented the intrusion on his regular routine he would have to find some other natives. He had to know if all the aliens on the planet xenogutted each afternoon as he was having his nap.

The though crossed his mind that he might not wake up some afternoon if his presence was causing the aliens to deviate dangerously from their norm.

THE most unnerving thing about the village was that there were exactly ten houses and precisely one hundred inhabitants. Each house was 33.3+ feet on a side. The surfaces were handhewn planking or flat-sided logs. There were four openings: each opposing two were alternately one foot and an alarming ten feet high. Barnhart couldn't see the roof. The buildings appeared square, so he supposed the houses were 33.3+ feet tall.

At the end of the single packed, violet-earthed street facing up the road was a large sign of some unidentifiable metal bearing the legend in standard Galactic:

THIS IS A VILLAGE OF QURONOS

Barnhart received the information unenthusiastically. He had never before encountered the term. The sign might as well have told him the place was a town of jabberwockies.

The single scarlet sun with its corona of spectrum frost was drawing low on the forest-covered horizon. Barnhart, dry of mouth and sore of foot, had not encountered yet a single one of the hundred inhabitants. He had missed his nap and his dinner, and now (he ran his tongue over his thick-feeling teeth) he was about to miss his nightly brushing of his teeth. He had taken only a minimum survival kit with him — which did not include a smaller personals kit.

His wristwatch, still on good, reliable ship's time, recorded nearly fifteen hundred hours straight up. His body chemistry was still operating on the Captain's Shift, whereby he spent part of the time with both the day and night shifts. It was nearly time

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for him to go to bed. Fortunately it was almost night on the planet.

He was searching out his portable force field projector from some loose coins and keys when the one hundred quronos came out of their houses and began geoplancting.

Fifth Day Marooned
The Journal of
Captain T. P. Barnhart, Late of
the U.G.S. Quincey

It becomes apparent that I may never leave alive this planet whose name and co-ordinates have been kept from me. By reason, justice and regulations, the men who put me here must pay (see formal attached warrant against First Mate O. D. Simmons and the remainder of my crew). For this reason and in the interest of science I am beginning this journal, to which I hope to continue contributing from time to time, barring sudden death.

At this writing I am in a village of ten houses identified as a settlement of quronos. These tall, hairless humanoids have performed an intricate series of indescribable actions since I first encountered them. My problem, as is apparent, is to decide whether these actions constitute their normal daily routine or whether I have instigated this series of actions.

If the latter is the case: where will it all end?

1700: *Fifth day*

Barnhart was not used to being ignored.

It was certainly not a part of his normal routine. Often in his life he had been scorned and ridiculed. Later, when he earned a captaincy in the exploration service, the men around him had to at least make a show of respect and paying attention to him. Being ignored was a new experience for him. While it was a strange thing to say of an explorer, Barnhart didn't particularly like new experiences . . . or rather he only liked the same kind of new experiences.

He kicked the wine-colored soil in red-faced impotence the first few dozen times quronos went silently past him on the way to gather fruit from the forest, or hew logs to keep the buildings in repairs (which seemed to be a constant occupation.)

However, when the twenty-fifth alien shouldered past him the morning after he first discovered the village, Barnhart caught him by the shoulder, swung him half around and slugged him off his feet with a stabbing right cross.

The alien shook his head foggily a few times and slowly climbed to his feet.

Barnhart bit at his under lip. That hadn't been a wise thing to do at all. He should know that unorthodox moves like that led only to certain disaster. He fum-

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bled for his force-field projector, and with a flush of adrenalin discovered he had lost it.

Now, he thought, the alien will signal the rest of them. And they, all one hundred of them (now does that include the one I first saw in the clearing or not?) they will converge on me and —

The qurono marched off into the forest.

Everyone was still ignoring Barnhart.

BARNHART munched on a steak sandwich listlessly and watched the aliens through the faint haze of the force field.

He had found the projector half stamped into the earth and he was testing it. But even a test was foolish. None of them was close enough to him to harm him with so much as a communicable disease. He might as well quit roughing it and get back to the cottage.

In the last few days he had had time to think. He took up his journal.

Eighth Day

I can only suppose that these actions of the aliens represent some kind of religious ritual. Again I am presented with the problem of whether these rituals are a part of their normal, daily life, or are they a special series instigated by my presence?

Yesterday I observed two of the quronos repairing one of the village houses. The native lumber seems to be ill-suited to construction purposes. Several times I have noticed logs tearing themselves free and crawling back into the virgin forest. Due to the instability of their building materials the aliens are constantly having to repair their houses.

In watching the two quronos at work I observed something highly significant.

The humanoids worked smoothly as a team, splitting and planing down the reluctant logs with double-bladed axes. Then, putting the lumber in place, they fastened it down with triangular wooden pegs. They pounded these pegs home awkwardly with the flat side of the axes.

The axes are crude and obviously indigenous to the culture.

I view this with considerable alarm.

Obviously any culture that can produce an axe is capable of inventing the hammer.

The quronos are not using their hammers in front of me. I am producing a change in their routine.

Where will it end?

What are they saving their hammers for?

800: *Eighth Day*

Barnhart had written that just before dawn, but as usual the aliens had continued to ignore

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him. For all he knew the ritual might go on for years — before they used their hammers. Or whatever they were planning.

It was drawing near time for his nap, but he felt completely wide awake even inside the safety of the force field. His throat hurt and the backs of his legs ached with the waiting, the waiting for the natives to come out and begin xenogutting.

He wiped his hands together and forced a smile. Why should he worry what the natives did? He was completely safe. He could live out his life in immutable security.

But this wasn't his world. No part of it was his . . . or at least only the part he had brought with him. Sanity lay in holding to what was left of his own world. But sanity didn't always mean survival.

What if he could make the quronos' world his own?

Barnhart wiped at the tiny stings against his face and his fingertips came away moist with beads of perspiration.

The aliens began marching out of the houses, in twos from the ten-foot doors, singly from the foot-square openings of every other facing wall.

It wasn't his world of fireworks-streaked Ohio summers and bold green hills, this planet cowled with nun-like secrecy, looking acrid, tasting violet and transmitting a beauty and confusion only a trio of physical scientists could solve.

But there was only one thing to do.

Barnhart let down his force field and went out.

The human body wasn't well-adapted for it but Barnhart did his best to join the quronos in xenogutting.

Instantly the cry welled up.

"Master."

Barnhart stood up and faced the aliens, deeply disturbed.

HE was even more disturbed when, later, he wrote again in his journal:

Ninth day

"Qurono," I have learned from the Leader, is a term referring to a particular type of subhuman android. The synthetic process used in manufacturing these men does not allow them to develop beyond a certain point — a built-in safety factor of their creators, I can only suppose. Thus they were given the concept of the axe and have retained it, but they were able only to devise the idea of using the axe to hammer things with and are not capable of thinking of a special hammering tool.

With almost complete lack of creative ability they are bound to the same routine, to which they adhere with an almost religious fanaticism.

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Since last night I have been treated as virtually a god. I have been given one of their buildings entirely for my own use.

I find this turn of events obsolutely surprising. I intend to discuss this with the Leader today. (Note to any ethnologist who may see these papers: Since all quronos are built to the same standards none is superior to another. But, recognizing the need for one director, each of the one hundred has an alternate term as Leader.)

900: *Ninth day*

Despite the upsetting turn of events Barnhart decided he was more comfortable in his familiar role of command.

He glanced at his wristwatch and was surprised to note that he had overslept. The time for both breakfast and chronopting was past. He made himself ready and left the building.

The alien was waiting just outside the door. He looked as if he hadn't moved all night. Yet, Barnhart thought, he seemed a trifle shorter.

"Are you the Leader?" Barnhart asked.

"I am the Leader. But you are the Master."

As an officer of a close-confines spaceship that sounded a little stuffy even to Barnhart. The fellow *still* looked shorter. Maybe they had changed Leaders the way he had been told the night before. Or maybe quronos shrank when left out in the night air.

"Let's go someplace where we can sit down. And, incidentally, just call me 'sir' or 'captain.'"

"Yes, sir."

Barnhart nodded. He had been expecting: Yes, Master, I will call you 'captain.'

But the alien didn't move. He finally decided that the Leader thought they could sit on the ground where they were standing.

Barnhart squatted.

The Leader squatted.

Before they could speak a muffled explosion vibrated the ground and Barnhart caught a fleeting glimpse of an unstable chemical rocket tearing jerkily into the maroon sky.

"Celebration for my arrival?" Barnhart asked.

"Perhaps so. We are putting the un-needed ones in status."

He decided to let that ride for the moment.

"Tell me, why didn't you recognize me before I joined you in your — ritual, Leader?"

The alien tilted his head. "What was there to recognize? We thought you were some new variety of animal. Before you xenogutted how were we to know you were rational life?"

Barnhart nodded. "But how did you so cleverly deduce that I was your Master?"

"There are one hundred of us.

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You were the one hundred and first. You had to be the Master returned."

The Master had been some friendly lifeform in the Federation, obviously. Otherwise the qurono androids wouldn't speak Galactic. Barnhart nibbled on his under lip.

"I want to find out how much you still know after the Master has been away so long," the captain said. "Tell me, how do you communicate with the Master?"

"What for?" The Leader began to look at Barnhart oddly.

"For anything. Where's the subspace radio?"

The direct approach produced a rather ironic expression on the qurono's narrow face but no answer. But if there was a radio on the planet Barnhart meant to find it. Spacemen forced to abandon their craft were required to report to the nearest Federation base as quickly as possible. Besides, he meant to see that Simmons and his Anglo stooge and all the others paid for their mutiny. But, he decided, perhaps he had better not press the matter at the moment.

Another rocket punctuated the moment of silence.

"Take me to your launching area," Barnhart said.

The android stood up and walked. But he walked at Barnhart's side, forcing the captain to catch his stride a half-step to let the alien lead him. He wasn't sure if it was a mark of respect not to get ahead of the Master or an attempt to see if he knew where the launching site was located. The quronos were limited, but just *how* limited Barnhart was beginning to wonder.

THEY rounded the clump of drooping lavender trees and Barnhart saw the eight men laying on the ground in the transparent casings. Not men, but quronos, he corrected himself; in a molded clear membrane of some sort.

"They are in status," the Leader explained, answering the captain's unasked question.

"This is how you keep your population at one hundred," Barnhart thought aloud, removing his glasses to rest his eyes and to get a better look at the bodies. Despite regulations he could still see better without his spectacles.

"It is how you arranged it, Master. But as you know we are now ninety and one."

The captain put his glasses back on. "I'll test you. Why are you now ninety and one?"

"Naturally," the Leader said emotionlessly, "you required a whole shelter unit to yourself. We had to dispose of the ten who previously had the unit."

Barnhart swallowed. "Couldn't

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you think of anything less drastic? Next time just build a new unit."

"But master," the alien protested, "it takes a great deal of work to construct our units. Our lumber escapes so badly no matter how often we beat it into submission. Our work capacity is limited, as you are aware. Is it really desirable to overwork us so much?"

The captain was a little shocked. Was this humorless, methodical android really protesting a command from his Master? "How do you suppose the ten you are putting in status feel about it?" he managed.

"They would doubtlessly prefer not to be overworked. Our fatigue channels can only stand so much."

But it wasn't the work, Barnhart suddenly knew. It was the idea that there could be *eleven* houses, instead of ten. The concept of only ninety quronos and a master must be only slightly less hideous to them. They couldn't really be so overjoyed to see him.

A third rocket jarred off, rising unsteadily but surely in the low gravity. It was a fairly primitive device — evidently all they retained from the original model supplied them by the Master.

Barnhart looked at the figures on the ground. Only seven.

"The ones in status go into the rockets!" Barnhart gasped.

"And circle in the proper orbits," the Leader agreed.

This time he saw the quronos lifting a stiff form and taking it to the crude rocket. It looked entirely too much like a human body. Barnhart looked away.

But at the edge of his peripheral vision he saw the quronos halt and stand up their fellow in status. He glanced at his wrist. Fifteen hundred hours. The aliens began geoplancting.

Barnhart ran his tongue over his teeth, noting that they needed brushing. He came to himself with a start.

Of course. He had almost forgot.

Barnhart faced the others and joined them in geoplancting.

A hideous cry built from one plateau of fury to another.

"He's no better than us!" the Leader screamed.

Ninth day

I have made a serious mistake.

While it was necessary for me to conform to the quronos' ritual to get myself recognized, I should not have continued to adhere to it. Apparently by these creatures' warped reasoning I established myself as a reasoning creature by first joining them in their routine; but when I continued to act in accord with them I proved myself no better than they are. As

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Master I am supposed to be superior and above their mundane routine.

At the moment they are milling belligerently outside my force-field screen. As I look into their stupid, imaginationless faces I can only think that somewhere in the past they were invented by some unorthodox Terran scientist, probably of English descent. They —

Wait.

The force field. It's wavering. It must have been damaged when it got tramped underfoot. They are going to get in to me. It —

Barnhart watched them prepare the rocket that would blast him into an orbit circling the planet. He could see and even hear the sound that vibrated through the thin membrane in which he was encased, but he could not move a nerve-end. Fortunately his eyes were focused on infinity, so he could see everything at least blurrily.

The Leader, who seemed to have grown a few inches, wasted no time. He gave the orders and the quronos lifted him into the rocket. The hatch closed down on the indigo day and he was alone.

The blast of takeoff almost deafened him but he didn't feel the jar — only because, he realized, he could feel nothing.

A few weeks later the centrifugal force of the spinning rocket finally nudged the latch and the hatch swung open. Barnhart was exposed to naked fire-bright blackness itself.

After a day or two he stopped worrying about that, as he had stopped fretting about breathing.

He grew accustomed to the regular turn around the planet every fourteen hours. For two out of every three seconds he faced out into space and that was always changing. Yet, all poetry aside, the change was always the same.

He didn't have to worry about keeping on a schedule. He kept on one automatically.

And he didn't like it.

So he kept retreating further and further from it. . .

"WE couldn't leave him there!"

What? Who? Barnhart thought along with at least seven other double-yous. He returned to himself and found that he was standing in the airlock of a spaceship, faced by his first mate Simmons and his stooge York.

"We couldn't leave him there," Simmons repeated with feeling. "That would be the nastiest kind of murder. We might maroon him. But none of us are killers."

"It's not the punishment we will get for the mutiny," York complained. "It's having to go back to his old routine. That time-sched-

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ule mind of his was derailing mine. He was driving the whole crew cockeyed. Even if he wasn't going to kill us all by the rule book, I think we would have had to maroon him just to get rid of him."

Simmons fingered a thin-bladed tool knife. "I wonder how he got up there in that rocket and in this transparent shroud? I'm sure he's alive, but this is the most unorthodox Susp-An I've ever seen. Almost makes you believe in destiny, the way we lost our coordinate settings and had to backtrack — and then found him out there. ("I'll bet he jimmied the calculator," York grouched.) You know, York, it's almost as if the world down there marooned him right back at us."

The first mate inserted the knife blade. The membrane withered and Barnhart lived.

"Now the arrest," York murmured.

"What are you muttering about, York?" Captain Barnhart demanded. "What are we standing around here for? You can't expect me to waste a whole afternoon on inspection. We have to get back on schedule." He looked to his wrist. "Fifteen hundred hours."

"He doesn't *remember*," York said behind him.

"He remembers the same old routine," Simmons said. "Here we go again."

Barnhart didn't say anything. In the close confines of a spaceship there was bound to be a certain degree of informality.

He stepped inside his cabin at the end of the corridor and did what he always did at fifteen hundred hours.

York and the first mate were deeply disturbed.

Barnhart looked out at them sharply. "Well, spacemen, I run a taut ship here. I expect everyone to hit the mark. Adhere to the line. Follow my example. Snap to it!"

Simmons looked at York and his shoulders sagged. They couldn't go through the whole thing again, the marooning, the rescue, then this. That routine would drive them crazy.

Even this was preferable.

They joined Barnhart in geoplancting. — **JIM HARMON**

★ ★ ★ ★ ★

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THE LUCK OF MAGNITUDES

By GEORGE O. SMITH

Earth's near neighbors in space are a most convenient size — for us. Otherwise, astronomy would be a far more difficult science!

THE human being, we are told, lies about halfway in the scale between the size of nuclear particles and the vastness of the great universe they comprise.

This is a meaningless concept, because neither of these extremes can be appreciated. They can only be expressed in figures that require a special mathematical notation — because they are too little on one end and too large on the other for the kind of numbers we use in our daily lives.

But it can be argued that the size of the Earth and its distance from the Sun are approximately ideal for the development of life. And once this point is established, it can be argued further that the size and distance relationships between Earth, Moon, Sun and stars are just about right to arouse the curiosity of the first glimmer of intelligence, and to place it on the long road toward knowledge.

Taking first things first, we start with the proposition that water-based hydrocarbon life is by far the most likely to succeed. Let us thus take a couple of new looks at Mother Earth.

The spectral class of any sun will define the planetary temperatures for any orbital distance we may want to calculate. For *the* Sun — i.e., Sol — a planet inside of the orbit of Venus will be too hot to permit the formation of ice.

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And outside of the orbit of Mars it will be too cold to permit the formation of water vapor. Since water-based hydrocarbon life depends upon an environment in which the solid, liquid and vapor phases of hydrogen-oxide can exist in equilibrium, the solar radiation alone places a minimum and maximum limit of planetary distance for life to exist. The Earth lies just about in the center of Old Sol's "life-belt." As far as distance is concerned, this is indeed the best of all possible worlds.

Now about the size. We could go smaller, but not by much. Mars is about half the diameter of Earth; since mass is a function of the cube of the diameter, the mass of Mars is about one-eighth of the Earth. As a consequence, Mars hasn't enough gravity to hang onto a decent atmosphere, to say nothing of hanging onto its water. For, you see, the molecular weight of water is only 18, whereas the weight of the oxygen molecule is 32, nitrogen is 28, and carbon dioxide is a whopping 44. Move Mars in to the orbit of the Earth, and the additional heat would boil away what little water Mars has managed to retain.

THE upper limit is more flexible. If we consider an Earth the size of Jupiter we get into some interesting trouble. The first thing that comes to mind is the 2½ gravities increase. This is enough to provide Jupiter with a dense, thick atmosphere that probably reaches critical pressure high above the actual surface of the planet itself. "Critical pressure" describes a gas so highly compressed that it behaves as a liquid. This leads to the speculation that Jupiter might not have a true surface but rather a transition zone that passes from gas to liquid to solid with no defined phases. Further evidence is the rotation of the planet. The equatorial zones rotate at a different speed than the temperate zones, which rotate at a different speed than the polar zones.

But that is only first thought. If we examine the picture more carefully, we get a shock. To support life, Jupiter must be transplanted to an orbit within the life-belt. But if you do this Jupiter will begin to evaporate. For Jupiter is one of the ice-giants. That is, Jupiter and the huge outer planets are strongly suspected of being composed mostly of ice.

This speculation has good foundation. The preponderance of hydrogen and oxygen in the universe suggests that hydrogen-oxide is a plentiful substance indeed. The density of Jupiter is slightly higher than that of water. What could be better than to make a tremendous planet with

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the density of water out of the most plentiful stuff in the universe?

Well, there's always good old ammonia, NH_3; which, by the way, has the same molecular weight as good old H_2O. There are few other plentiful substances with the same physical characteristics.

Jupiter is ten times the diameter of Earth and would therefore be a thousand times the mass if the big fellow were composed of rock and metal and other stuff as the Earth is. Instead, Jupiter is just a big fellow with one thousand times the volume of Earth — which by some odd circumstance is just about the same proportion as the water-making elements bear to the rest of the periodic chart found in the universe.

Or maybe it isn't really so odd.

But since a real honest-to-goodness rock-and-iron Jupiter would have a surface gravity about 12½ times that of the Earth, let's take a look at something more reasonable.

Let's add more earth to the Earth until we're living on something which is built of the same stuff but two times the former diameter. This double-Earth will have eight times the volume and mass, and the surface will be two times as far from the center. The first fact increases the gravity by eight. The second diminishes the gravity by the inverse square of two, which is one-fourth. This gives the double-Earth a surface gravity of 2, which provides meat for two pertinent observations:

First, that the surface gravity of a planet is proportional to its diameter and to its density. (A fuller exposition of this statement, plus a table of its workings in our Solar System, is appended.)

Second, the size limits for life aren't as wide as we'd have expected. Mars, at one-half the diameter of Earth, can't hold a satisfactory atmosphere and even less water. The hypothetical double-Earth is too close for comfort to the conditions that prevail upon Jupiter. One is therefore tempted to set the size limits between three-quarters and one and one-half times the diameter of Earth.

HAVING been handed this divot of celestial real estate, of critical size and distance from its primary, it remains for curiosity and intelligence to appreciate it.

First, the Earth and Moon are unique in being more of a double planet that a planet and satellite system. From the Earth, the Moon subtends about a half-degree diameter circle in the sky. Since its orbit is fairly eccentric as orbits go, the apparent diameter of the Moon varies between

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Surface Gravity as a Product of Diameter Times Density

Resolved: That the surface gravity of a planet is proportional to its diameter and its density.

Premise: This is a restricted way of applying Newton's Laws in which a statement of the planet's diameter defines at once the distance from surface to center and also the volume. By including the density, the planetary mass emerges automatically since mass is a function of density times volume.

Argument 1: Given two planets of equal density, one twice the diameter of the other, Planet A will have eight times the volume and hence eight times the mass of Planet B, and will exert eight times the attraction at a given distance. But the surface of Planet B is twice removed, the square of which is four, and thus the attraction is diminished by one-fourth; hence the surface gravity of Planet A is twice the surface gravity of Planet B.

Conclusion 1: For equal densities, the surface gravity of a planet is directly proportional to its diameter.

Argument 2: Given two planets of equal diameter, one twice the density of the other, the first will have twice the surface gravity of the second since their volumes are equal, the distance to the surfaces are equal and their masses are proportional to their densities.

Argument 3: If Planet A, above, with twice the diameter and hence twice the surface gravity of Planet B, is now increased in density by two-to-one, its surface gravity will also be increased by two-to-one according to Argument 2, and its surface gravity will then be four times the surface gravity of Planet B.

Conclusion: That the surface gravity of a planet is directly proportional to its diameter and its density.

The following is a table of calculations made from figures in Willy Ley's **Conquest of Space** in which the diameters have been rounded. The surface gravity was calculated by the conventional method of planetary radius versus mass. Columns 4, 5 and 6 are my calculations, made to 10-inch sliderule accuracy. Agreement in surface gravity between the two methods is as close as the other figures are known.

Planet	Density	Diameter	Surface G	Density	Diameter	Surface G
Mercury	2.86	3,100	0.27	0.518	0.393	0.203
Venus	4.86	7,700	0.85	0.879	0.976	0.856
Earth	5.52	7,900	1.000	1.000	1.000	1.000
Mars	3.96	4,200	0.38	0.717	0.532	0.382
Jupiter	1.34	86,700	2.64	0.243	10.9	2.67
Saturn	0.71	71,500	1.17	0.129	9.6	1.24
Uranus	1.27	32,000	0.92	0.230	4.05	0.933
Neptune	1.58	31,000	1.12	0.286	3.93	1.12
Pluto	5.8 ?	6,500?	0.9 ?	1.05 ?	0.824?	0.865?

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slightly larger and slightly smaller than the Sun. This provides the denizens of Tellus with the gorgeous spectacles of total and annular eclipses of Sol. A total eclipse would not be possible with a smaller Moon; no annular eclipse would occur with a larger one.

Perhaps no celestial event has caused so much fear, awe, religion, fol-de-rol and scientific interest, and few natural events have awakened such an interest in recording the date and time as the solar eclipse.

Thales of Miletus is supposed to have stopped a war between the Lydians and the Medes by predicting a solar eclipse and attributing it as a warning from unpleased gods. A couple of thousand years later The Connecticut Yankee saved his hide by the same process of doing more powerful medicine than Merlin. Both stories are—stories. Thales could not have predicted time and place for a solar eclipse; he hadn't enough knowledge. Of course, he undoubtedly knew the Babylonian "Secret of the Saros" in which the motion of the Moon and the pattern of lunar eclipses are repeated every seventeen years. (Actually, every 225 lunations.) Thales was also aware of what made eclipses. He might have been able to predict an eclipse of the Moon, since this event takes place over several hours and is visible from the entire hemisphere that faces the Moon at the time. But, *for a specific location,* eclipses of the Sun are rare — although hardly a year goes by without at least one solar eclipse visible from some spot, and some years have two. So the closest that Thales could have come was to predict the possibility that such an event could take place at or near such and such a date.

No moonlet such as Deimos would create much stir. There would be no great spectacle to fear, revere or study. Kings would not bother to hire Royal Astronomers to predict the unimportant event of a minuscule speck crossing the face of the Sun, and scientists would have dismissed it as useless until recently when the value of timing transits became known. Now, the fact that the king used these predictions to threaten his enemies or to prove his wisdom, or to bamboozle his people into thinking he had a direct contact with Jove, Wotan, Baal and Co., is not important. The side-benefit is. When the king appointed you to the post of Royal Astronomer, with a certain chance of being relieved of office by the Lord High Executioner for flubbing, you darned well studied astronomy and learned how to predict eclipses.

Nor would a minute moonlet

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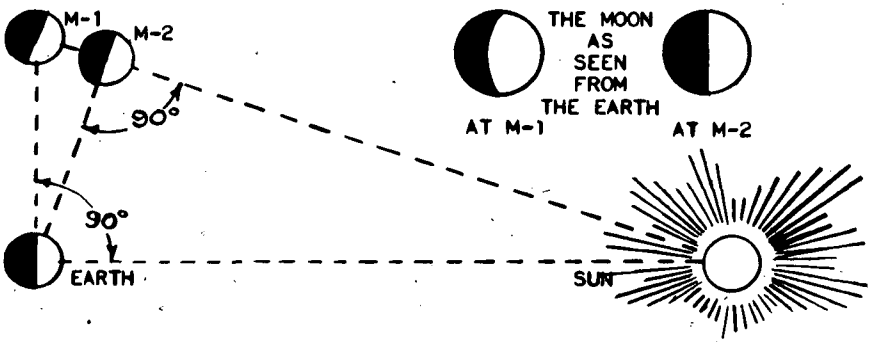

Figure 1: Aristarchus's measurements.

show phases, which is a feature that led to early conjecture that the celestial bodies were spherical.

IT WAS Anaxagoras of Clazomenae who demonstrated with a candle and a ball that the puzzling phases of the Moon could be explained by suggesting that the Moon was spherical and illuminated by the moving Sun. This demonstration caused conjecture about the rest of the celestial bodies, mainly the five naked-eye planets which tend to wax and wane and disappear. Such phases or partial phases had to wait for Hans Lippershey to tell Galileo about the telescope, although some of the sharp-eyed Greeks claimed to have seen crescent phases in Venus. (This is unfortunately too much like reporting a vision or relating ex post facto a forecast of doom. One can claim to see the crescent phase of Venus with the naked eye . . . but it isn't likely.)

One thing is certain. The Greeks had some very sharp-eyed observers. For a concrete example of observing something that lies on the slender edge of non-visibility, take the measurement of the Earth-Sun-Moon relationship performed by Aristarchus of Samos. Aristarchus argued that when the Sun and the Moon were at right angles, the terminator line on the Moon would be curved as shown in Figure 1, at M-1. Then when the Moon had moved to where the terminator line is straight, position M-2, then a right angle would exist between the Sun and the Earth with the Moon at the corner. For a pair of long, skinny triangles such as those shown, E,

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M-1, M-2 is similar to S, M-2, E; that is, the triangles are the same shape but different in size. Once this layout is measured by its angles alone, determing *any* of the linear distances will reveal the whole shooting match by the application of some simple trigonometry.

Now comes the gimmick. The next time you have a chance to look at the Moon in either the first or last quarter, take a good look at the terminator. Watch it closely for about ten minutes. Observe the change in the curvature of the terminator line in those ten minutes, for that is about what it takes for the Moon to move from M-1, geocentric quadrature, to M-2, lunacentric quadrature. This, by the way, represents a true movement of about five miles over the center of the face of the Moon from curved terminator to straight. Aristarchus flubbed, and so did Hipparchus, Posidonius and Ptolemy one after another. None of them believed in the vastness of the vast, so they all shaded their figures low. Their error wasn't so great; but the important thing is that they did get figures for this split-hair experiment.

One can, in a conjecture of this kind, argue that a larger Moon, or more comparable distances, might have made their work a lot easier. But by placing this triangulation on the very extreme limit of detectability, another near-impossible measurement is made feasible.

The same Aristarchus of Samos is given first credit for proposing the heliocentric solar system. He ran into two violent objections, neither of them religious. The first is the apparent absence of aberration and the second is the apparent absence of parallax. Both, said the other philosophers, must be present if the Earth is in motion about the Sun. Let's take them in order:

Aberration is defined as a form of distortion in which things do *not* appear as they *really* are. For example, it is raining gently with no wind so that the drops are coming straight down. Now if you don your sou'wester and go for a drive in your chariot, you'll observe that the down-falling raindrops are apparently coming at a slant, and that the amount of slant depends upon how fast you are going. Related to astronomy, it would appear that the source is forward of its true position; if we are in motion with respect to an orthogonal flow, the cloud or the star that emits the light must appear to be displaced forward along the line of our motion. Thus, they argued, stars lying along the axis of this supposed orbit should describe circles, revolving once each year; stars lying along the plane of this sup-

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posed orbit would move back and forth each year; and stars between the axis and the plane should make ellipses with an eccentricity proportional to the angle between these extremes.

THE lack of aberration can be explained in any one of three ways: 1) the speed of light is infinite; 2) the stars are so far away that the aberration can't be detected; or 3) the Earth is exactly where we always claimed, immobile and at the center of the universe. So there!

The truth, of course, is 2) and considering the Greek ability to measure the speed of light, we might well toss 1) in as a total loss. If it looks like a dog, smells like a dog, barks like a dog and acts like a dog — confound it, it is a dog. If you can't see something it's invisible, and if you can't measure something it might as well be infinite!

It turns out that the Constant of Aberration is 20.47 seconds of arc. Divide the diameter of the Moon into 1800 equal parts, draw a circle the size of one part and you'll have the displacement that the Greeks couldn't observe.

We all know about parallax. Thales seems to have discovered it in his studies in geometry; he used it to measure the distance from shore to a ship at sea. This was the first optical range-finder system and it lasted about 2500 years, until radar displaced it during the late unpleasantness.

With parallax in mind, the proponents of the geocentric theory scoffed at a mobile Earth.

When parallax is mentioned, the star 61 Cygni comes to mind because it was the first to be measured. Um — the heliocentric parallax of 61 Cygni is listed at 0.293 seconds of arc. This isn't simply splitting hairs, friend. It's dividing hairs into umpteen hundred equal slices. And that ain't all. 61 Cygni has a proper motion. That is, it moves as all celestial bodies move; 61 Cygni moves across the sky at the rate of 5.22 seconds of arc per year.

So whither 61 Cygni? With a declination of about 40 degrees, its aberration will make an apparent ellipse about twice as long as it is wide; its dimensions will be the Constant of Aberration, 20.47 seconds. This ellipse will flow across the sky doing 5.22 seconds linear motion per year. The ellipse will be distorted by heliocentric parallax of 0.293 seconds.

The only thing that keeps heliocentric parallax from being completely smothered is that we don't measure it by sighting the star and then reading the setting circles on the telescope. It is done by comparison against the background of stars, all of which un-

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dergo equal aberration, cancelling it. What remains is the proper motion and parallax which combine to produce a wavy line 5.22 seconds between peaks and 0.293 seconds amplitude.

In passing, the nearest star, Alpha Centauri, has a parallax of only 0.760 seconds and a proper motion of 3.68 seconds. Neither of these make a whale of a lot of improvement over 61 Cygni.

YOU may argue in favor of a larger orbit, which would provide a longer heliocentric baseline. It would be colder, but if we'd evolved on an Earth-sized planet along the orbit of Mars we'd have had enough air to breathe and we'd have become accustomed to the chilly temperature.

The distance from the Earth to the Sun is still a subject for argument. The best estimates place the error at plus or minus about 50,000 miles. Move Earth out farther and solar parallax diminishes accordingly. Solar parallax is so nearly a straight line that it becomes difficult to assay, using the diameter of the Earth as a baseline. For the Sun can't be compared in position against the starry background like measuring the parallax of a star. During total eclipse? Fine, but could you trust your figures, realizing that the gravitational field of Old Sol will diffract light rays just as A. Einstein said it would?

Make the Earth bigger? That means a more dense atmosphere and greater diffraction. Since geocentric parallax requires measurements made from the widest separation, the geometry places the observed object low near the horizon whether it is sighted simultaneously by two stations a hemisphere apart or by one station with a twelve-hour wait between sightings. Refraction gets worse as the object approaches the horizon. What is gained by distance is lost by distortion. Make the Earth larger by the acceptable physical limit and — again, what is gained by distance is lost by distortion.

City hall isn't the only thing that can't be licked.

— GEORGE O. SMITH

July isssue of IF — still on sale — contains a complete short novel by Allen Kim Lang which Galaxy readers will enjoy. It is *The Chemically Pure Warriors;* it's a sequel to his *World in a Bottle* which appeared here. Also stories by Keith Laumer, Cordwainer Smith, Bryce Walton, etc. Get your copy today!

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By JOHN JAKES Illustrated by RITTER

ONE RACE

THERE are mornings and mornings. This was one of the latter. Rotten clear through.

Isaac Nels Rhinelander knew very well the cause of the dark brown taste in his mouth the moment he awoke. In characteristic fashion he charged his happiness deficit to other accounts. For example, the violent argument at breakfast with his brother-in-law, Atwater Pope.

Ten minutes after it was over, Rhinelander couldn't even remember the topic. How cumulus clouds formed. The dimension of a gnat's wing. Some other equally

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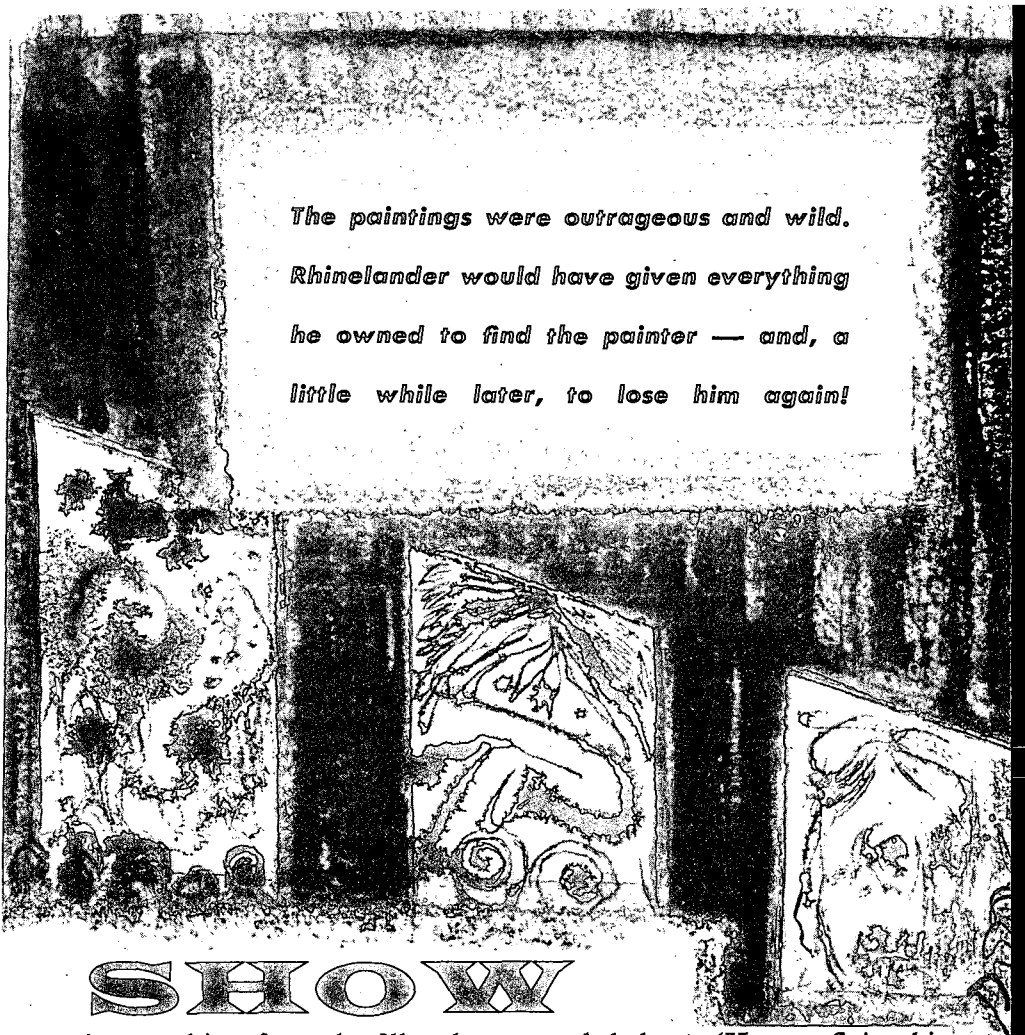
The paintings were outrageous and wild. Rhinelander would have given everything he owned to find the painter — and, a little while later, to lose him again!

SHOW

inane subject from the filler slugs of the morning news sheet that unreeled from the printer in the breakfast atrium of Rhinelander's (actually his wife Iris's—*ugh*) villa.

Watty sat there, cool and educated and superior, adjusting the chinstrap of his burnished steel crash helmet. (He was flying his vertiracer in a rally at noon.) To every argument Rhineland put forth, Watty replied in metaphor and epigram and little rapier thrusts of logic. Finally Rhinelander just screamed. Lost the argument, of course. Watty chuckled, activated his sports-

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model personnel jets and went flying out of the atrium the winner. As always.

That was enough to make Rhinelander feel rotten through and through. But it wasn't the true cause of the rotten feeling. Rhinelander found still other events to blame. Such as:

The unaccountable breakdown of his Chrome De Luxe Executive Limoubus, whose magnetic pilot jumped the aerialway guidestrip on the two hundred and sixty mile trip from the suburbs into New York, and crashed in an undignified although harmless way into the thick foamex median. Other conveyances whizzed by. Their occupants cheerfully smoked or read morning tickers, unable to stop. Rhinelander had to trudge in the hot sun to a call box. He had to suffer the sneers of the mechanics who came, raised the forward deck of the Limoubus by means of magnetic cranes and then took care of his difficulty.

Actually, it required only one mechanic to solve the trouble. He just reconnected a short spring which held two motor rods together in a most untechnical way. Rhinelander stumped from one foot to the other, beet red. He saw that the mechanics were exchanging sidelong glances of derision at his expense while they totaled up their bill. They let him go easily, however: eighty-five dollars. But that didn't relieve the mounting rottenness of the day.

As the Limoubus whisked on toward the slender gleaming pylons of the megalopolis eighty miles ahead, Rhinelander once more felt the sting of the true cause of his anger and frustration. Hot stabs of jealousy, of virulent envy, shot through him. He refused to acknowledge them, waiting, just *waiting*, for the next mess.

That mess was not long in coming.

IT happened ten seconds after he walked through the electronic doors of The Rhinelander Galleries, which occupied the entire first floor of The General Matter Building on Park Mall.

In the lift-tube up from the garage, Rhinelander had halfway composed himself. After all, he was about to enter his own personal domain, as he did on the three working days of each week. He pulled his corpulent frame up to its full height of five feet three. His cheeks stopped flapping. His protuberant blue eyes receded into their sockets. Like an emperor he breezed through the doors, rubbing his plump little hands.

And stopped.

Under the multicolored beams which bathed the central display pedestal in the gallery's marble foyer, several of his employees,

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including his assistant Phenley, were wringing their hands and gazing at a litter of striated copper-shot stone on the floor. Phenley rushed forward.

"The workmen," he gargled. "Teamsters. Hook slippage during erection."

Gazing at the wreckage of Jan van der Maarsch's rendering of *The Culture of the Womb*, Rhinelander shrieked, "Get out of my sight, Phenley, before I kill you! Two hundred thousand I pay for that, and you let the boobs break it before we even get the critics in! Call the insurance people and stay away for two weeks or I won't answer for your safety!"

"Oh, sir, I'm so terribly sorry, so terribly sorry," Phenley kept saying. Then Phenley's voice was silenced by another sound. One of the gallery functionaries poked at a last piece of the sculpture teetering on the pedestal.

This piece, of course, crashed to the floor just a second before Rhinelander stepped into his private office.

By now his cheeks were flapping and bulging again. His eyes stuck out to amazing dimensions.

Groping for the spigot of the TrankwilSoda dispenser in the bottom drawer of his desk, Rhinelander heard the taped metallic voice of his automatic secretary:

"Please call Mr. Kuprin. Mr. Kuprin communicated at two minutes past nine, eight minutes past nine, fourteen minutes past nine and twenty-eight min—"

"Ah, *God!*" breathed Rhinelander, slamming his hand on the stud that shut off the wretched voice. He swilled a tumbler of TrankwilSoda. It did no good whatever.

He buried his head on his arms and tried to shut off his mind. Impossible. Argument with Watty, wrecked Limoubus, smashed sculpture—all paled. He was face to face with the actual cause of his frustration.

HE could not avoid getting in touch with Kuprin. The ethics of the business demanded it. If he didn't there would be talk. Talk could hurt.

But perhaps the opening had flopped. Even as he reached for the hand microphone, he knew the opening had not flopped. He pressed the stud combination for Kuprin's studio. A section of desktop lifted. A screen swam and blurred. Presently a thin, wild-haired man in a smock, his face smeared with daubs of ochre, appeared.

"Good morning, Nels. Seen the reviews?"

"No, I have not. You know I wouldn't concern myself with such trash. Who is this Caul anyhow? Who's heard of him?"

"The whole art world, by now,"

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said Kuprin with a nasty little smile.

"Why are you badgering me? Just because I shaved the price on that lousy gesso item you flim-flammed me into buying in August?"

"I merely thought you'd be interested in the opening of the Caul show!" Kuprin pulled some gobs of paint off his nose. "You really must see it, Nels."

"Go to Swallows's? I never go to other galleries."

"For this you must. The canvases—well, have you ever looked at hell?"

"Several good facsimilies," said Rhinelander, thinking of his wife and Watty.

"They're really remarkable. When the rest of us are polite, full of form and balance—" Kuprin swayed a little, weaving illusions with his paint-smeared hands—"this man, whoever he is, wherever he is, has visions of nightmares. Ugly. Terrible. *Horrid.* No landscapes like his exist on earth any more, with everything so beautiful and aseptic. But somewhere this Caul saw such scenes. I'm a little sick." From behind his immense spectacles, Kuprin glanced sidewise at Rhinelander through the screen. "Certainly this makes Swallows the pre-eminent gallery in the city, perhaps even in the world.

Jealousy wrenched Rhinelander's gut. "The stuff's really that good, eh?"

"Marvelous, marvelous."

"I haven't got time."

"Don't be petty, Nels. It's a shame you couldn't have snared Caul."

"Caul, who the hell is Caul?" Rhinelander shouted. "Whoever heard of him before?"

"Apparently Swallows did, one way or another. I understand there are even lines around the block. Can you imagine? Lines, for an exhibit of paintings! Well . . ." Kuprin waved in a vague way. "I suppose I might as well go back to work, although I doubt there'll be much market for my stuff in the next few months. Not at the best galleries, certainly. Swallows doesn't need me. I'll show you what I'm doing, when it's further along."

Kuprin promptly switched off, leaving Rhinelander to fume before the blank screen. He knew at last that he could no longer dodge the source of his feelings on this rottenest of all rotten mornings.

For weeks the art world had buzzed with rumors of the new show soon to open at Swallows's. Rhinelander, not wanting to believe, had tortured himself into believing. And it had all come true. But who was Joe Caul? Who'd ever *heard* of Joe Caul?

Rhinelander sent for biographical tapes.

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No painter named Joe Caul existed.

Then Rhinelander sent for the morning reviews.

They made him foam.

Rhinelander, finally, sent for his Limoubus. He would, to torture himself further, have a look at Joe Caul's hell.

II

LET it be said in Rhinelander's favor that Joe Caul overwhelmed him.

A thin drizzle was falling when Rhinelander reached the ivory and platinum front of The Frederic Swallows Gallery. Doubtless the weather service felt it was time for a little rain, but the rain made Rhinelander mad, especially since he had to wait in a damp, shuffling line of customers that stretched half way around the square.

Most of the students in line had come with portable rain-deflectors. They were in a holiday mood, buzzing with talk about the Caul canvases which they would soon be privileged to view. Rhinelander felt his dignity violated by this forced mingling with members of the public. And then, just as his section of the line reached the great Swallows doors, the tower blowers came on and all the artificial rain clouds were swept away, leaving the streets gold and gleaming in the sudden overwhelming sun.

Feeling spongy, Rhinelander would have hated Michelangelo himself. So it was a strong reflection on Rhinelander's character and Joe Caul's brush technique when he was overwhelmed in spite of the fact that the gallery attendant hadn't even honored his trade courtesy card, but had made him pay admission just like anybody else.

Rhinelander was not only overwhelmed, he was awed and frightened too. Caul's canvases brought the stink of animal fear, raw as a piece of decomposing liver, into the refinement of Swallows's main hall.

Few spoke while viewing the Caul works. Swallows had, by design, reduced the lighting so that only the canvases themselves, huge panels a uniform twenty by ten, stood out against ebony drapes. Knots of art-lovers huddled together, soaked and struck dumb, under each of the five works. Their faces held none of the joy or exhilaration some sensitive souls show when gazing upon a new or revolutionary work. Instead, eyes gleamed wetly. Mouths hung loose and even a little moronically.

For in each of the five works, signed in block letters and black oil, *Joe Caul,* and labelled crudely *Pictur 1, Pictur 2,* through *Pictur*

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5, those who looked saw no heightened reality or beauty. They saw nothing they could measure by any customary yardstick. They saw instead, a heightening of sickness. They saw insanity made two-dimensional.

"Evil filth," Rhinelander whispered. But he couldn't tear his eyes away from Pictur 1 to gaze at Pictur 2, the first was so powerful.

VIEWS of hell? Rhinelander knew the description was far too simple. Hell, as all the sophisticated spectators knew, was a fictitious place, like Amusement Land on the West Coast. The writhing purple and green and orange creatures, only dimly human, shrouded in pestilential vapors and frozen like hideous Laocöons, had a peculiar realism that made Rhinelander think to himself, *This is ghastly;* then, *This is beautiful;* then *This is totally, utterly real—whatever it is.*

Under the spell of the canvases which seemed merely different views of the same subject (whatever that was, besides reality) Rhinelander found himself both repelled and fascinated. Repelled by the labyrinthine weaving of shape and color, suggesting ever so many indecent images. Fascinated by the sledgehammer realization that, although he didn't quite understand, he was face to face with total truth.

Let it further be said in Rhinelander's favor that he gazed at each of the pictures for at least twenty minutes without once feeling envy. At last, however, business concerns became too great. He tottered out of the exhibit hall, looking back as though expecting one of Caul's creatures to be roosting on his shoulder. Finally free of the grip of the paintings, he ended up in the office of Frederic Swallows, with Mr. Swallows on page by his autosecretary.

Fortunately Swallow's office was along an outer wall. Sunlight poured in and helped dispel the obscene guilt which Rhinelander had been feeling. It took only a moment for his regular nature to assert itself. He started pawing through papers and memoranda on top of Swallows' ornate desk, searching for a clue to the elusive Caul.

His cheeks puffed suddenly. He'd found something.

Caul, the slip said. Plus *Geneva Credit Depository. 43-1289-66.*

One of those numbered bank accounts? Rhinelander wondered. He heard footfalls in the outer corridor. Hastily he stuffed the slip back under a pile in its original place. He was lighting up a dollar Nirvanatella when Frederic Swallows whisked in like corn husks rustling on a stalk.

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"I HARDLY expected you, Nels," Swallows said. His hair was white, his face still whiter, his hands laced with blue veins. He was ninety-six years old, kept alive by nutrient cosmetics and injections of hormones. Swallows dry-washed his hands briskly and pursed his lips. "You are not noted for your magnanimity, old friend. One would have thought you would have stayed away."

"From—from that?" Rhinelander waved outward. "Impossible. All I've heard about Joe Caul is absolutely true. I congratulate you, Frederic."

Swallows nodded. "You're right, you're right. Once, in my youth, when I was taking drugs and painting in Tahiti, I saw one or two visions something like those pictures. I was so appalled I committed myself to a sanitarium. When I was cured, I thought about trying to recapture a little of what I'd seen. The prospect was so grisly that I remained drunk for three months. I've never had the impulse again."

Swallows began to bustle and pry among the papers on the desktop. "Yes, I'm flattered that Caul, whoever he is, chose to send his paintings to me. He must have picked my name from the gallery directory. That was a lucky chance, eh, Nels?" From under the litter of memoranda, he drew out the slip at which Rhinelander had been peeking. "Excuse me."

Since Swallows's eyesight was so weak, he had to turn his back to the window and hold the paper to the tip of his nose, in the sun's beam. At that moment a window-washer's platform slid into view on the face of the building. The washer was scribbing busily. He had an immense fan beard of red and wore a hearing apparatus. Rhinelander tried to remember when, if ever, he had seen a window-washer. When he was a child? Swallows forced the papers against his eyes, then tittered.

"Ah, yes, this is the one. Excuse me, excuse me."

The window-washer's platform vanished upward out of sight. Rhinelander was no longer paying attention, for his brains had suddenly fastened on a remark the old man had made a minute before. He watched Swallows waggle one foot in the air, make a few quick passes with his left hand, open the visual safe and pop the slip inside. *Casual, now,* Rhinelander thought. *Very casual.* He cleared his throat.

"Frederic, did you say you don't know this Caul personally?"

"I DID, I did, old friend," said Swallows, meaning, *old enemy.*

"He selected your gallery at random?"

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Swallows lifted a shoulder-blade. "I suppose so. How else to explain the sudden arrival of five massive crates one day last month? A day later came a note, with ten cents postage due. Ludicrously written. This Caul can barely spell. Witness 'pictur'. In his illiterate hand he informed me that something made him want to show his works, and if I deemed them of any value I should deposit funds in one of those secret Swiss bank accounts, whose number he conveniently provided. The numbers were so miserably written I had to try seven accounts before hitting the correct one. Some clever advisor has doubtless told this Caul, wherever and whoever he may be, about numbered accounts. His own hand—I had it analyzed—proves he's something above an imbecile, but only a little something. Very strange, very peculiar."

"Have you heard from Caul again?" Rhinelander asked. He felt better now, almost wolfish as his mind repeated, to fix it firm, *43-1289-66.*

"No, but I certainly hope I shall. If I never sell another canvas in my lifetime, Caul's five pictures will make me comfortable. I might even say wealthy." Swallows ruffled a few more paper and chits. "I do appreciate your stopping, Nels. Drop in again whenever you wish. But I have at least a hundred letters from various museums requesting chromostats of one or all of the Caul canvases, plus proofs of a critique I've just written, and— oh." Swallows blinked again, as though he had just remembered a formality of the profession. "How's your business?"

"Very brisk," Rhinelander said with a smile, hate boiling his guts.

"Too bad you couldn't have gotten Caul. Pure chance, though. Well, good day."

"Yes, too bad," Rhinelander echoed. He shook the old man's spidery hand and passed out of the office thinking, *43-1289-66.*

With a shudder he walked beneath Picturs 1 through 5 and didn't look up. He didn't want to be unnerved again. He was feeling too rich, too hot-headed, too sure and exhilarated.

"Too bad," he said again as he shoved his way through the crowds still waiting outside. At the end of the building he paused, looked both ways, spat on the platinum gallery name-plate.

"Forty-three, twelve-eighty-nine, sixty-six, you old bastard. I haven't got him now. But I soon will have."

III

AT the evening dinner Rhinelander's wife Iris had one of her shrieking spells.

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The meal began cordially enough. Artificial sunset filtered through the pergola that overlooked the pool, where mechanical swans floated in geometric patterns. Iris, Rhinelander and Watty reclined on their couches, eating roast duckling with orange sauce.

Iris brought up the subject of a party she was giving in a few weeks. She planned to turn the entire house and estate, including Rhinelander's wing, into an extinct Asian commune. Watty, wearing only shorts and several bandages from the race, sucked on gobbets of duckling and appeared indifferent. Rhinelander struggled up from his couch to protest the party.

In the phony sunset light Iris looked disgusting to Rhinelander. No longer a young woman, she insisted on dyeing her hair a different shade each month. This month it was pea-green. She wore tight scarlet trousers woven with platinum threads and a blouse which revealed her large flabby bosom. Her nails were three inches long. Rhinelander cared for her only occasionally. Tonight was not one of the occasions.

"I won't have my house tricked out to resemble some socialistic experiment, Iris."

Iris clamped her sharp little teeth on her lower lip and tried to show patience. "Darling, can't you at least look at the clever plans?"

As if on signal, a young creature in pink drawers and a cosmetic suntan burst in at the pergola entrance. He began to unroll sheafs of brownprints. The sight of Yoggemeyer, Iris's personal decorator, infuriated Rhinelander even more.

"I *refuse* to look at them!" He kicked over a platter of duckling. Yoggemeyer minced aside, nearly getting his lacquered toes slopping up with orange sauce.

WATTY chuckled, licking his fingers. "Obstinate tonight, aren't we, Nels?"

"You keep out of this, playboy!" Rhinelander snarled.

"Dear Nels," Watty said, propping up on one elbow. "I should to do that. But you make it impossible. A moment ago you said you wouldn't have 'your' house redesigned to accommodate my sister's desires, but you really don't have much choice. Let's not have a scene, please. I had a hard day."

"Vertiracing?" Rhinelander sneered. "Pah. Playing games."

"Facing more reality that you possibly could," Watty said.

"Anyway," Rhinelander said, "we've gone this route before. The house and estate are registered in my name, and therefore—"

"Please," Yoggemeyer cooed,

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"if you'd just glance at these cunning plans—"

"Get the hell out of here!" Rhinelander threw half of the duckling at the decorator. Yoggemeyer squealed, his head covered with ooze and raisins, and disappeared sobbing behind the hedges.

This set Iris to flexing her claws. She paced back and forth, a raw edge on her never very soothing voice:

"Isaac Nels Rhinelander, we certainly have discussed the registration before, and need I remind you that it's *my* money, and my brother's, which enables you to live in such luxury? I'll decorate, and I'll decorate any way I damned *please!*"

"There," Watty chortled. "Now can you confront reality or not, dear Nels?"

For a moment Rhinelander's eyes threatened to explode out of his head. His cheeks worked like bellows. He glared at the pair with hate brimming inside him. He wanted to smash their heads. He wanted to kill. To shut them up. To kill. To kill. To *kill*—

But he managed to get control of his emotions. After all, he had Caul to consider. And the numbered bank account.

He lowered his sweating body back to the couch as Iris paced to the other side of the pergola, beating her fists against her thighs. Rather nonsensically, too, Rhinelander thought. Ah, things were calming down.

AT that moment Watty noisily sucked some meat from a duckling leg. "You can't face reality, Nels. Really you can't. Few can. Care to debate?"

And, unreasonably, Rhinelander exploded again:

"Yes, damn it, Watty. I'll debate with you, you smug wastrel."

"You see?" Watty pointed with the bone. "I, at least, know where I'm going. Nowhere. Whereas you, destined for the same goal, think you're going somewhere. That is precisely what I mean about reality. Take this morning.

"Two vertiracers collided at the rally. Bloody goo all over the firing pad. A crowd gathered, bug-eyed. Why? Because, Nels, no one could actually believe that two human beings had been jellied. The people stared at the remains until they convinced themselves of it. Then they went away. In an hour I'll wager every one of them was certain again that *he* could never be jellied because those two wretches weren't jellied either—it was all some sort of dismal dream. The mind simply refuses to accept some things, and invents all sorts of clever excuses for not doing so. *Your* mind, for example, refuses to accept two basic facts. One, that you have flimsy artistic tastes. Two, that

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you have no real business instinct. Therefore your gallery is, and always will be, a monumental flop, sustained by the funds that Iris pours in."

"And do I pour them in!" Iris shrieked. "Oh, my God, *do* I!"

"I could kill you," Rhinelander said. "I could, Watty."

"Do you think that that surprises me?"

Rhinelander stormed to his feet, bent toward Watty. "What if I admitted all you said? That so far I've never amounted to anything much? What if I said, all right, I know I exhibit second-rate items but now I'm on to something of quality. Now I'm going to fight and scheme until I get my hands on it?"

"Something of quality?" Watty was skeptical. "What might that be?"

"More paintings by Joe Caul."

Never before had Rhinelander seen Watty show astonishment. "I've heard of the Caul things. Are there more than five?"

"There may be, if I can unlock a numbered bank account in Switzerland."

"Impossible, Nels, old boy."

"All right," Rhinelander said tightly. "I agree. See, I'm realistic. But you have the right connections, Watty. And enough money. *You* could unlock the personnel dossier behind that account. If you wanted to do it badly enough. If you wanted to see whether or not I'd fail."

Rhinelander's eyes narrowed now as he tried to gauge the effectiveness of his goad, his dare.

"Would you like to gamble on my ineptitude, Watty? If you would, unlock the account. That's all I ask."

"It might be amusing to watch you fail."

"Take a chance, Watty?"

Watty threw back his head and laughed. "Give me the number in the morning."

A TIDE of relief swept over Rhinelander. "Thank you, Watty," he said as his mind ticked over a hundred cruel tortures he would enjoy inflicting on his brother-in-law in return for this particular bit of groveling. Emotions and luck had thrown Watty's help his way. Rhinelander felt a little stronger for having chanced and won.

But he was deeply ashamed, too, because his emotions had been laid bare.

Chewing on a piece of duckling as the rheostats began to fade out the sunsets, he heard Iris approach, her heels ticking on the paving. His eyes were large, wet, carefully empty of emotion.

"There will be a party, Nels," Iris said. "It's my money."

"There had better not be."

"There will be, there will be,

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the *will* be," he whispered, almost like a prayer.

Rhinelander stuck his fingers in the pneumatic tubes of the sanitary unit next to his couch. Liquid jets and brushes cleaned off the duckling grease. He somehow felt a thousand miles away from this witch with green hair.

"I don't wish to talk about it any more."

But even as he promised himself that one day he would kill Iris and Watty, he also realized he would never have the courage to do it. *Small triumph only,* he thought. *Better than none, though. Watty thinks I'll fail. Reality? I can face it well enough. He'll see.* Still, the mixture of hate and doubt assailed him.

Iris went shrieking off to consult Yoggemeyer, Watty to shoot a game of dimensional billiards. As the last of the festering light died behind the lattices Rhinelander lay panting on the couch, rationalizing himself into believing that more Caul canvases would be worth all this.

IN the exalted orbits of leisure and finance in which Atwater Pope revolved, bribery was not bribery.

It was a cordial cocktail at a wheel lounge spinning in space five hundred miles above Cape Fear.

It was an exploratory luncheon at an inn among pine trees just outside Olde Manhattan Metropolis National Forest.

It was a process in which the briber (never *called* that, of course) made a polite request, and the briber sent four or five dozen messages via the communications mirrors whizzing around Earth, then suggested certain discreet investments.

After a short interval, which allowed the bribee to get answers and the briber to gather up a small sinking fund of several millions, a yachting party was arranged in the ionosphere. Matters were brought to fruition over iced tonics on the infrared deck. Although the proceedings were wholly dishonest from start to finish, at least they were genteel.

It took Watty eight and a half weeks to unlock the secret of 43-1289-66.

And in those fifty-nine days the printing presses of the world hammered out matte finish reproductions of Picturs 1 through 5, in twelve colors, on press runs upwards of eighty million.

A news service ran a simulpix of a Tibetan monk examining a print of *Pictur 3* which had found its way into the crystal fastness on the back of a steel packass in the summer supply caravan. Aborigines (what few were left) and intelligent school boys (even fewer) carried Joe Caul prints

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around with them, dreadfully fascinated. Earth crowned a new god of canvas, one whose work it could not quite understand.

Editorials and clerical proclamations decried the veiled horror of the new messiah of art. But not a single voice denied the awful something that was the truth of the pictures, pictures which pirate lithograph houses had to spew out by the bale in order to keep up with the demand.

No one seemed to know the whereabouts of Joe Caul, at least publicly. This was due to the remarkable circumstance that no one, apparently, wished to find Joe Caul. If he were anything like his works, the unspoken feeling ran, best that he be left alone.

But in every six billion rational people there is bound to be at least one Isaac Nels Rhinelander.

He'd waited eight and a half weeks. He'd groveled before that. Now he was on the trail.

IV

THE State of Industrial Jersey had an output amounting to one tenth of the GNP, and a resident population of twenty-eight. Rhinelander had to hire a low-paid ranger from the forestry service at Olde Central to lead him into the wilderness of towering automated factories, all alike except for their name signs and their products which went shooting, cased, to every land via underground pneumatic systems.

Industrial Jersey sprawled out beneath a depressing blanket of smog and drizzle. Even the ranger got lost twice in the empty cement canyons before he brought Rhinelander to Yummydinners Ltd.

The one clear, traceable name written by Joe Caul when he had filled out the personnel dossier for Geneva Credit Depository six months ago was the name Hubert Elk. This appeared in a column headed *Personal References.* Beside the name, Caul had scrawled: *lended me $ for paints.* Other vital sections—*Current Address, Current Employer, Current Cable Code*—Caul had left blank, shunning public attention. Well, now he had public attention, and Rhinelander had Hubert Elk, a portly man who shut off one lever marked *Broasted Gooselet in Artichokes Yummydinner* and yanked another stencilled *Tomato Surprise Under Glass Yummydinner.*

Fidgety with impatience—Elk refused to be hurried—Rhinelander watched the processes underway along the two-mile floor of the food works, six stories below the small bubble of an office. At one side of the vast cavern mammoth dump bins poured soya pods into funnels which led to

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hooded conveyors whose escape valves squirted occasional puffs of red steam. On the opposite side of the cavern, claw forks stacked bright cartons of Gooselet Yummydinners onto skids which were then blasted down distribution tubes with small rocket charges. When Elk switched from production of one Yummydinner to another the dump-bins continued to pour out soya pods but the packaged goods which emerged had become Tomato Surprises, plastic glass bells included.

"About Joe Caul" Rhinelander dragged his gaze away from the belches of red steam which reminded him of Pictur 4. "You are the Hubert Elk with whom Joe Caul was once—ah—associated?"

"Right, that's me." Elk picked his teeth. "Owner and sole operator of Yummydinners. Caul used to work for me." He glanced at Rhinelander's enameled card again. "Art dealer, huh? I heard something about Caul and his pictures. He used to paint around here, too. Why?"

"As an art dealer, I wish to develop—ah—greater public appreciation of his remarkable talents. I wish to locate him. So that I can purchase more of his pictures."

ELK guffawed. From behind a bank of instruments he dragged a small canvas whose subject was a water spaniel, done with syrupy realism in garish tones of yellow and rust. Rhinelander recoiled from its wetter-than-life tongue.

"Oh, come now, Mr. Elk. Caul didn't paint that."

"He certainly did," Elk said testily. "I watched him do it. After all, he worked for me, didn't he? Plus eight or nine other factories."

"Not as an artist, surely?"

"Nope. Janitor. Swept out the office here." Elk waved at the clanking conveyors far below. "What else could he do in a place like this?"

"You seriously expect me to believe Joe Caul painted works of this sort?"

"If you don't believe me, here's the signature. You have to look close. Down in the corner. 'Joe Caul.' "

Aghast, Rhinelander saw that it was so.

Elk turned smug. "Didn't I tell you? He painted dogs, mostly. When it wasn't dogs, it was angels and martyrs. Caul wasn't too bright, you understand. How could a man be, and be a regular resident of this place? I haven't seen any of his pictures all the papers are talking about, except for one they ran in black and white. Didn't look like Joe Caul's stuff to me, at least not the Joe Caul I knew before the accident."

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"Accident?" Rhinelander's cheeks quivered. "What sort of accident? When?"

"Sub-reactor on the synthesizer belt vibrated its shield bolts loose. Caul had swept up here and was on his way over to Blumenthal Better Ball Bearings to do the same. He got burned in the atom shower. Of course we rushed him to the autodoctor to get the charge neutralized. Only trouble was, I found out later the machine was due for overhaul that next week. Some of its tapes were a mite worn. Caul didn't seem bad off after the accident, but he had trouble sleeping nights. Slept like a top before. I was going to cash his compensation for him, send him to a clinic to check the work the autodoc had done—hell of a bother, but it's these Goddamn bureaucratic laws we got—but by then Caul was committed."

"Committed?" Rhinelander's eyes began to bulge. His nostrils grew big as dimes. You don't mean to some sort of therapeutic farm?"

"None other than Thlex," said Elk, with another smug nod.

"Narcotics? Caul was on narcotics?" (That would explain some of the visions. Some, but by no means all.) "How did you find this out?"

"Why, Caul told me. He had dreams, he said. Couldn't sleep, but he had dreams. Imagine that. So he robbed one of those robopushers always parked around the turnpike entrances, and got hooked. That was two years ago."

ELK rose and peered at a pressure gauge imbedded in a wall bank. "Hell, I was glad to see him leave Industrial Jersey. He wasn't the only one had insomnia. Soon as I brought him back from the autodoc I couldn't get more than two hours a night myself. Toss, turn, thinking of my inlaws, production problems, worry, worry, worry. Must of felt responsible for Caul's trouble. Anyway, when he committed himself to try and shake the habit, I began to sleep sound again. Shows you how the Goddamn spenders who run this country can make a man feel guilty if he doesn't wipe the nose of any stumblebum who sweeps up his shop. Caul's probably still in Thlex for all I know. Good riddance. After he was burned, I couldn't even stand to look at him." For a moment Elk's eyes looked far beyond Rhinelander to something ghastly. Then the mood passed.

"Excuse me now, mister. Time for the three o'clock changeover."

Rhinelander attempted to thank Elk but the latter was occupied with another lever labeled *Grape Aphrodisia Gelatin Yummydinner, With Extra Vine Leaves Included*. Rhinelander let

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himself out of the office bubble. He ran down the automatic stairs to the exit where the ranger was waiting for him in the rain.

As they walked along the ranger said, "Find what you were after?"

"I most certainly did." In his mind, Rhinelander saw himself delivering punches to Watty Pope's groin. "Let's hurry. I must catch a flight for Kentucky as soon as possible. I—good heavens! Look at that!"

On a corner between automated factories a man with a huge red beard was selling newssheets from a portable stand. Not actually selling them. Merely standing there holding an ear trumpet to the right side of his head while the rain turned the newssheets spongy. All at once the bearded man caught sight of Rhinelander and the ranger. He scuttled out of sight around the corner of a factory, kicking over his stand as he went.

The ranger shook his head. "Crazy. Who reads papers out here, I wonder?"

"These aren't even papers," Rhinelander said, stooping to pick up the top sheet. All the letters including the masthead were greeked. The reverse side of the page was blank. The bundle underneath was compressed excelsior. Rhinelander felt a shiver of fright chase down his spine. He looked around the corner. The red-bearded man had vanished into the rain and the empty concrete distances.

THE only staff professional at Thlex who had time to talk with Rhinelander was a Second Assistant Staff Recreationist named Dr. T. T. Wu. And he clearly demonstrated that he was none too happy about the assignment by reminding Rhinelander two seconds after they met that Thlex received a minimum of ten thousand patients a week. Rhinelander could well believe it.

At Central Administration in Lexington City he had made a generous donation of some of Iris's money. It had then taken him two hours by rotor to reach Dr. Wu's section, five counties away, because nearly three-quarters of the state was occupied by the national narcotics hospital. The gently rolling landscape, all sunlit green hills and long grass, swarmed with thousands of figures in white gowns wandering to and fro like extras in some epic from Hollywood-on-the-Tiber.

Dr. Wu's irritation showed on his young, lemon-colored face. He and Rhinelander had to walk two miles before they found an unoccupied bench, where they could chat.

"I can give you only ten minutes, please, Mr. Rhinelander,"

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Wu said. "At ten I am directing six hundred of our inmates in a Shakespearian therapy." Wu pinched his upper nose. "Going badly, too. Our lumber mill was supposed to have delivered the Birnam Wood costumes last Tuesday. All I get is excuses, excuses, excuses. Let's see."

Wu dug into his smock for a card. "Hmmm. Quite a substantial donation. I'm no public relations man, but I suppose I must cooperate."

Rhinelander said irritably, "I had hoped the donation might facilitate—"

"When we release a thousand patients a week only to get ten thousand?" Wu's little chestnut eyes snapped in the Kentucky sun. "God pity our staff if we ever have a depression, Mr. Rhinelander. Then we'll really be jammed. Now we have only the social cases. Those in the exurbs who try it for kicks and then—but time is wasting." Another glance at the card. "Caul, was it? Ah, yes, Caul, Caul. Low status, I recall. No education, no money, no children, no mistresses. No reason to become addicted. Here three weeks. Had to release him."

"Cured?" Rhinelander was disappointed. A confirmed addiction might explain the haunting, evil quality of the Picturs, but a reconstructed addiction—

Wu shook his head. "Totally hopeless. Besides, he caused riots."

Rhinelander's eyebrows shot up. "Riots?"

"Yes, riots. Among his village mates. When Caul arrived they began to complain of sleeplessness. As did Caul himself. Caul was completely uncooperative. Stayed up all night painting. Big, psychotic pictures. Three of them while he was here. One of our inmates looked at Caul's work and went into a screaming fit. *'I know what that is!'* he screamed. Two nights later he murdered three matrons and escaped over the Ohio. He drowned trying to swim to a roadside fix stand on the other side.

"The man had been partially cured, too," Wu added snappishly. "Well, I simply don't have time to stand for such regressive nonsense. So after the patients began to riot—the first riot broke out one night when Caul displayed his canvases after mess—I obtained an executive order. I crated his nightmarish work and shipped it, and Caul as well, to the place we send all our incurables."

RHINELANDER batted away a bee which was buzzing and looping around his nose. His whole body erupted in perspiration. His heart jackhammered under layers of fat. Dr. Wu fidgeted,

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stared at his sandals, at the sky, at his nails, at several inmates acting out their hostilities by playing freeway drivers in a nearby glade. Rhinelander thought: What luck! A physician too idealistic by half, too caught up and concerned with his charges to know, even now, what a find he once had in the person and the paintings of Joe Caul. Carefully Rhinelander said:

"To what place do you send your incurables, Dr. Wu?"

Wu stood up. "Denver. The Monastery of Positive Thinking. It's for incipient and developed insanity. Caul reached the latter state shortly upon arrival. If you'll pardon me, I must check up on Birnam Wood. Your donation is appreciated, but it still hardly makes a dent. Send me a new lumber-mill foreman instead." Off he went into the dappled sunlight falling through the magnolias.

Starting up a hillside toward the rotor park, Rhinelander got a jolt. Stenciled against the sky, an attendant wheeled an empty patient's chair. The attendant had something resembling a jeweler's loupe screwed into his left eye. His reddish beard flapped in the hot wind.

Rhinelander began to run. "Wait, you! Wait just a moment! Stand still, I tell you."

But the bearded man was younger and more agile than Rhinelander. He tipped over his chair, flung off his white smock and jackrabbited away over another hill. Rhinelander puffed after him, but got only as far as the chair whose wheel revolved lazily and caught the sun in chrome glints. He was panting too hard to run further.

Leaves stirred in the woods into which the figure had vanished. Rhinelander wished he were nearer an analytical lab that could, for a fee, get hold of the perspiration index left on the chair's handgrips. Who *was* that damned spook with the red beard?

Some flunky Watty had hired to check on the success or failure of Rhinelander's search?

Yes, that must be! Rhinelander mopped his face and pursed his lips in a little smile. He could feel his blood pressure mounting as he thought of Watty and Iris but he calmed himself by thinking:

Denver. Denver. When he shook a fist at the blue sky, it was the fist of a victor.

V

RHINELANDER'S sense of victory was so complete he couldn't resist sending Watty a message before he took off from Thlex. He reported his destination, reported that he had located Joe Caul, reported that within a

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day he would most certainly have Joe Caul signed to the exclusive management and representation of The Rhinelander Galleries. See how Watty liked that.

As the sonicliner whined down over Denver through a sundown sky all gold and royal purple, Rhinelander munched a Digest-o-tab provided by the stewardesses to help get rid of the sixteen courses of the flight meal. He reflected that soon he would prove once and for all that he was really a clever and resourceful person.

A short twelve miles by limoubus from Denver and he reached the sprawling onion towers of the Monastery of Positive Thinking. It was twilight. Motorized doves wheeled above the chapel. The carillon rang out the strains of *Smiles*.

As Rhinelander entered the gate he saw a platoon of the brothers marching briskly through a cloister. Barefoot, each wore impeccable flannel habilaments. Each was whistling in an optimistic way. Rhinelander had heard about the order. Its brethren were mainly hopelessly insane advertising executives. Their tranquility was achieved through the use of drugs. Nevertheless, the entire scene had a refreshing spiritual air which Rhinelander enjoyed.

A novice asked him to wait in the garden until Evening Plansboard was finished. Rhinelander sat on a marble bench in the piney mountain evening at the foot of a bronze statue of the great hospitaler himself, J. Walter Thorngate. The hands of the figure were widespread in a gesture of invitation to the figure of an ailing consumer lying at his feet.

Before he knew it Rhinelander was joined by a stately monk with a crew cut and horn-rims. He introduced himself in a cheerful way as Brother Buzz, the Vice President in Charge of Intravenous Equipment.

"Your inquiry isn't precisely in my bailiwick," said Brother Buzz with a warm smile, "but since we're a team here, all involved in caring for the incurable and so forth, I'm sure I can help put a little zing back in your swing."

"Thank you, thank you," Rhinelander replied. "I'd like to talk with one of your patients. I believe his name is Caul."

"Joe? A swell guy. But then they're all swell guys." Brother Buzz, however, could not suppress a gentle frown. "Unfortunately he's our unhappiest ward. Complains constantly that the fellows on the team think pure white thoughts. But of course we do." Brother Buzz laid his arm across Rhinelander's shoulders. "We've zeroed in on the great truths, my friend. When we send positive

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thinking up the flagpole, every man on the team salutes. Actually you won't be able to see Joe until after the morning meal. The patients have retired for the night."

"Oh. But he's here, isn't he?"

"Of course."

NOW Rhinelander became very careful. "Brother Buzz, may I ask what may seem a question. Do you and your brothers have any contact with the outside world? That is to say, I mean specifically the world of art. You see, I'm an art dealer."

"The world of art? No, we're totally divorced from the world outside. We have no paintings here except for an original Rockwell in the narthex. However—" Brother Buzz shook his head—"I'm sorry you have made the trip for nothing, because that work is not for sale at any price."

Rhinelander suppressed a giggle. "All I want is to talk to Caul, please."

"Then you shall." Brother Buzz stood up and fished among the folds of his robe. "I'll show you where you can sleep. I regret the surroundings are modest, but our order believes that existence should be one single, harmonious ball of wax. In the meantime, you may be interested in this message. Our supply rotor dropped it along with our consignment of Gruel Yummydinners shortly after six."

Rhinelander did not unfold the slip until Brother Buzz had led him to the guest cell, and drawn Rhinelander's Gruel Yummydinner from the dumbwaiter. A beam of red sunlight came through the bars of the cell and lit up the letters of the message like flame:

GLAD TO LOCATE YOU IN TIME TO REPORT PARTY GOING SPLENDIDLY. YOUR PRIVATE POOL NOW PART OF SPLENDID RICE PADDY. GOVERNOR STEMPLE HIMSELF APPEARING AS LEADER OF COMMUNE! CHAMPAGNE DELICIOUS. JUST HAD TWO BEFORE WIRING. WATTY RECEIVED YOUR MESSAGE. SAYS HE REFUSES TO BELIEVE UNTIL THE SIXTH PICTUR IS HUNG AT RHINELANDER'S. I'D BE WITH HIM, EXCEPT HAVING TOO DELIRIOUS A TIME COMMUNIZING TO THINK ABOUT IT. IRIS.

"God damn," Rhinelander said. Then more vehemently, "Oh, God *damn* her." The arrogant message triggered him like a bomb. He raged and stamped up and down his cell with his mind a turmoil of humiliation and rage.

Redecorate his house, would she?

Against his wishes, would she?

Bitch! Flagrant, arrogant bitch.

Her money, her money, *her* money, he sneered to himself. *Oh,*

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yes—but not for long. Not when I sign Caul tomorrow!

IN a spasm of fury, Rhinelander kicked over the plastic wash stand with its metal bowl, towel, straight razor and bar of shaving soap. Then he stamped on the bowl until he bent it totally out of shape.

And Watty, he thought. Still thinks I'll fail. Still, still, *still.*

Rhinelander hurled the closed razor at the wall with a low scream of rage. Only the sound of the carillon pealing out *Happy Days Are Here Again* over the mountains prevented Rhinelander's noise from upsetting the entire monastery. At last, sobbing, he sank down on his pallet and blew out the single candle.

But he could not sleep.

He wanted to sleep. Something seemed to be sucking at his mind as he lay in the cool dark. Pulling and sucking and draining, until he could hardly move. He felt limp, exhausted. But his mind refused to accept this exhaustion. Instead, it conjured up tortures and indecencies and obscenities and cruelties committed upon the persons of Iris and Watty, tortures and indecencies and obscenities and cruelties of a magnitude which startled even Rhinelander's own soggy, hate-purpled self. At last, snuffling and weeping, he fell into a fitful light sleep.

Yet in that stage, foggy demons flew around inside his head.

"*You,*" the voice was whispering. A wet, loose-lipped sound. "You, *you.*"

Rhinelander sat bolt upright. He was bathed in cold sweat.

Through the cell window a shaft of icy moonlight fell on the cell floor. Rhinelander tottered toward the door. There was a horrid crawling on his spine. His hand trembled as he reached for the latchstring. When Rhinelander opened the door and shrank back, his visitor shambled inside.

The visitor stood in the moonbeam, spittle gleaming on his lips. Rhinelander's legs turned to jelly.

The visitor was a bent, flaccid man in his middle forties, pale with a face like suet. He stood looking foolishly at Rhinelander. His big eyes seemed to have caverns behind them. His feet, sticking out of shabby gray work trousers, were dirty, as if he were too imbecilic to give himself good care. Then Rhinelander saw the fresh daubs of color on the toes, on the trousers, on the tattered shirt. Finally, he saw what the man held, as the man brought it forward like a Mongoloid child displaying a bauble.

"Joe Caul," Rhinelander said.

"Thankee," said Joe Caul. "Ye helped me paint again. Many thanks."

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And he showed the small canvas.

RHINELANDER covered his face and fell shrieking against the cold stone wall.

"Turn it around, for Christ's sake. It's filthy."

Joe Caul blinked. "That's queer. A man calling himself dirt."

"What do you—*no, don't come any closer!* What do you mean?"

"I painted what I seed in your head tonight. I don't see things in the heads of them monks. They got pure white heads. Drugs or suthin'. What's wrong with a feller paintin' what he sees, huh?"

"What do you mean, you *saw* that?" Rhinelander howled.

Caul blinked innocently. "Why just like it always is, since the burn back when I was with Elk. I can't sleep no more. But when I close my eyes, I see. Finally I figured out what I seen. It must be inside heads. It *must* be," Caul repeated in his pleading whine. "Don't noplace in the world have crawly sights like that. One of the fellers at Thlex unnerstood. He unnerstood why I had to have drugs. Only way I know to get rid of this." Caul wagged the picture again. Rhinelander retched.

"Only way's to paint it, Jesus —" Caul was nearly weeping in the steel-blue moonlight now— "wisht I could paint a dog again. All I can see is this here. Awful. Take it!" Caul thrust the painting forward at Rhinelander. His voice shrilled up a note.

"Jesus, take it, mister. I don' want it, I can't *stand* it. That's why I sended the big ones to a name I seen in a directory book. The feller at Thlex, my friend, he said I could get money. I filled out some papers, he showed me how, except he was so high, I don't guess we did a very good job. Guess I got a bank somewhere. Don't know where, though. Money. I guess so, too. Except the feller unnerstood and swum all the way to Ohio and got killed hunting a new fix. He couldn't stand it either."

ALL at once Caul's mind ran down like a broken clock. He stood, just stood. His arms dangled. His lower lip made a plateau from which saliva dripped, evil and iridescent under the weird mountain moon.

"I see," Rhinelander choked, talking half to himself. "The burns—the incomplete treatment —you look inside heads—"

A stupid, pleading smile twitched Caul's lips.

"You unnerstand. You a friend?"

"No, I'm not your friend. Christ, *no!*"

"I can't he'p what I see," Caul mumbled. "I see it, I got to purge

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it out or I'd kill myself." Caul looked down at his most recent work. "Thankee. I wanted to paint again because some of what I seen was still inside my head, but—I guess—it takes a dirty head to get it really stirred again. Wasn't bad enough until you come. Just bad, not bad enough."

"A dirty head," Rhinelander said, with a witless giggle. He could hardly speak. "You—that's why—the Picturs—they look so familiar, but—dirty heads. They're—all of us?"

"Please," said Caul, holding up the painting.

"Give me that thing," Rhinelander screamed. He snatched the canvas from Caul's hands. scrabbled on the stone floor, opened the razor and began to slash, crisscross, with great outraged strokes.

Slash, slash, slash. Anything to eradicate the putrescent vision of his own mind which Joe Caul had somehow seen tonight, seen and sucked out and transferred to virulent, shadowy life on his little scrap of canvas. *Slash, slash, slash.* Rhinelander struck back and forth like a demon.

"What you doin', mister?" Caul caught Rhinelander by the shoulder with one loose hand. "Hey, there! What—"

Unable to control himself, Rhinelander spun around. His arm whipped back and forth in a continuation of the hysterical attack upon the canvas. The razor gleamed cold as death and sliced clean through Joe Caul's jugular.

Caul screamed. He lurched into a corner of the cell, kneeling in his own bubbling blood. Something blue-white exploded from the corridor. Rhinelander grew conscious of a babble of voices he had heard for some time. Then a louder voice exclaimed:

"Awright, awright, how was I to know he'd kill him? I got the shot, you can go in now an'—quit shoving, dammit! I'm a representative of the press."

Rhinelander staggered to another corner, unable to look at the twitching, bleeding thing he had killed. Through his blurred eyesight swam the face of Brother Buzz. Then another face with a red fan beard. Monks were tussling with the intruder, who had a camera and was shouting about being manhandled:

"Sigma. Charley Sigma, Topflite Press Service. Legit? Sure I'm legit! Been following this bird for days. Mystery of Joe Caul. Got a tip in Geneva about a cracked numbered account. What a story. 'The cesspool of the human mind on canvas.' Awright, awright, quit shoving. I know my constitutional rights. Where's the communication center in this dump?"

Mine, Rhinelander thought hideously. He had slashed the

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canvas but could not slash its image out of his thoughts. Purple, whirling, obscene. *Mine!*

"A little tranquility, brothers," said the voice of Brother Buzz with conference-room authority. Rhinelander felt the blessed needle pierce his arm to bring the blessed dark.

VI

RHINELANDER or Iris or Watty seldom went to the observatory in the villa because none of them were interested in astronomy. But the observatory sat upon the highest point of their property, overlooking a distant highway, so tonight the three of them stood by the balustrade, watching. Far off, lights by the thousands burned in a crawling pattern along the highway. Rhinelander turned his back, feeling chilly, although the evening temperature was over seventy.

He didn't care to watch. Iris had insisted, however, The psychomentalist who cleared Rhinelander of accidental homoslaughter at his hearing had also insisted.

Watty, never at a loss, chuckled.

"Did you see the sheets tonight, Nels old boy? Five hundred thousand copies of Professor Hatlo's new edition of *A Bioglossary of Great Artists* destroyed at the end of the press run? Poor Hatlo only finished revising it three weeks ago to include Joe Caul. And the reviews! What an about-face."

"Vile," Iris breathed. "Those—pictures." Her sticky lips twisted with loathing. "They couldn't come from any one of us."

"Oh, no?" Watty laughed again. He lifted his hand to indicate the moving chain of lights. "My dear, they're from all of us. Or were."

"When is Swallows's funeral?" Rhinelander asked. Swallows had hung himself.

"Tomorrow," said Watty.

"What fools we were," Rhinelander said with another long shudder.

"Amen," Iris said. "For once we agree, darling."

"Oh, no," said Watty. "A week ago we weren't fools. We were sensitive men and women. Tonight we've become fools again. Incidentally, Nels. Although you did find your friend Caul, I still consider that you failed to win our little challenge. Nels? Ah, well."

Rhinelander stood rigid, smiling a little now. The procession of lights had come to a halt. A red smear leaked up on the horizon.

It grew redder and taller. Soon it revealed the fifty thousand who had marched out of the city to burn the five Picturs of Joe Caul.

— JOHN JAKES

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GALAXY'S 5 Star Shelf

THIS PAST autumn, the New York *Times* published a fine article by Isaac Asimov recapitulating the role of science fiction of the recent past in the development of our present technology. The question that Asimov raised was, with so many of its basic plot concepts translated into reality, where does SF go from here? To an aficianado, the answer is obvious. The sky is *not* the limit. The tremendous breakthroughs in all branches of investigation are opening up fictional vistas that are positively staggering in their potential. The impact of all these innovations on social, political and economic levels presents a huge challenge to the author brave enough to attempt a picture of future life in a world formed in the mold of new scientific achievement.

Of course, to us this is nothing new. Such trailblazers as Asimov's own *Caves of Steel,* Pohl-Kornbluth's *Gravy Planet,* Bester's *Demolished Man* set a pattern for exploring fantastic environments from the viewpoint of day-to-day living.

However, another interesting point raised by Asimov:

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Just as we watched the science fiction stories of our fathers become matter-of-fact, so we can see our own favorite SF themes graduate into the realm of everyday reality. The rocket is fast following the path of the flying machine, the horseless carriage and the submersible boat. The sober space timetable issued by NASA reads like a plot background of recent super-imaginative fiction: two-man orbital flight, three-man flight, spaceship construction in earth orbit, orbital moon flight, moon landings. And all this projected only slightly more than a half decade into the future!

Living proof of this is a new series of boys' books by Donald A. Wollheim.

Just a short span of years ago, the words "American Rocket Society" conjured up a picture in the public eye of a group of wild-eyed, half loony visionaries, completely out of touch with reality, living in a dream world of their own. Now along comes this series, replete with ideas, concepts and themes which were utterly laughable then to Mr. Averageman and they read like, not today's, but yesterday's newspaper. *Sic transit* yesterday's science fiction. Mike Mars has already receded from the future to the past, alongside Tom Swift, The Rover Boys and the long list of Verne heroes.

MIKE MARS, ASTRONAUT; MIKE MARS FLIES THE X-15; MIKE MARS AT CAPE CANAVERAL; MIKE MARS IN ORBIT, all by Donald A. Wollheim, Doubleday & Co. Inc.

THESE BOOKS, which would have qualified as adult SF fare in subject matter if not in treatment five years ago, are carefully geared to reality.

Wollheim's intensive research has lent an air of authenticity to the stories that should impart considerable knowledge to young, would-be astronauts — of both sexes.

One beneficial result of the Russian lead in the space-race has been the elimination of the swarthy, bearded foreigner as the engineer of plot conflict. Wollheim has substituted a money- and power-hungry father and publicity-hungry son as the villainous team. Not much more edible, perhaps, but slightly more credible.

The individual titles are indicative of content and each volume is complete, although there is a crude tie-in at the end of each.

Rating: ***½

Another example of fiction outmoded by actuality is the following item, penned in 1954 but just now available here.

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THRESHOLD OF THE STARS by Paul Berna. Abelard-Schuman.

BERNA'S JUVENILE envisioned the French as winners of the space contest. He thus joins the ranks of a host of other foggy crystal ball owners.

The story action is viewed through the eyes of a twelve-year-old, son of a remote-control expert, cloistered along with a thousand others in a secret base. Security is strict but youngsters bent on exploration can slip mouselike through the tightest checkpoints.

Berna's concept of a burgeoning space project is, to say the least, naive, as are his estimates of costs. But this is easily forgiven. Eight years of hindsight can make an Einstein of anyone.

The story, outdated though it is, is written with Gallic verve and sparkles with a spirit of adventure and wonder. Young readers will find the outlook of the French adult a refreshing contrast to that of the usual American.

Rating:****

Then there is the ageless story, in which the author places the action so far in the future that there is little danger of scientific developments catching up with the yarn for quite some time.

SPACEMEN, GO HOME by Milton Lesser. Holt, Rinehart and Winston.

LESSER'S latest juvenile is in this category. And even though there is a continuing revolution in computer design and techniques, there is likewise little danger of any foreseeable parallel of Lesser's basic gimmick, a planet-size, self-operative computer of advanced design.

A joint project of a Galactic confederation similar to the UN, the Star Brain was built to settle all disputes between worlds. To supply the background for the story, it has ruled against Earth in a dispute with an alien race. Without going into story detail, suffice it to report that it is a study of the contrast between the good and the bad inherent in human conduct and how such a contrast might baffle alien intelligences.

Rating ***½

Books for youngsters are among the best gauges of technological advancement. Dikty's collection, believe it or not, contains not a single story that was written for a juvenile audience. All, without exception, were written with the highly informed adult reader in mind.

Such is the pace of our scientific progress.

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EVERY BOY'S BOOK OF OUTER SPACE STORIES edited by T. E. Dikty. Frederick Fell, Inc.

DIKTY'S ANTHOLOGY is an odd assemblage of real McCoy and real McCorn. Of course, back in the '30s, such as Manly Wade Wellman's *Men Against the Stars* read like pure heart rather than 99.44% hokum. However, most of the others are excellent.

Kornbluth's *That Share of Glory,* Correy's . . . *And a Star to Steer Her By,* Abernathy's startling concept of *The Canal Builders* and Jameson's *Blind Man's Buff* are all typical of the unlimited horizon of SF.

Rating: ****

Asimov himself is a master of the timeless story. Of his dozen or so novels, none is in any danger of immediate obsolescence. He is his own best example of what an unfettered imagination can create from trends or developments that are barely emerging in our own time. None of his novels is more recent than half a decade past, yet each is a fresh-cut gem.

TRIANGLE by Isaac Asimov. Doubleday & Co., Inc.

DOUBLEDAY HAS done the present crop of SF devotees an enormous service by reissuing three of Asimov's most popular novels: *The Currents of Space, The Stars Like Dust* and *Pebble in the Sky.* All are big novels, with Galactic Empires as backdrops and inventions beyond imagination as commonplaces yet the emphasis is on little, ordinary people.

Rating: Don't miss them.

A HOLE IN THE BOTTOM OF THE SEA by Willard Bascom. Doubleday & Co., Inc.

THE ABOVE BOOK serves as an admirable example of fact encroaching on fiction in our specialized field. I'd be a wealthy man if I had a dollar for every fictional hole in the Earth's crust, from Verne's and Burroughs's to the shiveringly ingenious one being drilled from below by Arthur C. Clarke. But, frankly, I don't recall any fictional excavations of real depth beneath the ocean floor. Quite a few books, from Coblentz's *Sunken World* to the Pohl-Williamson juvenile subaquatic series, have envisioned limited penetration of the undersea crust but all have fallen short of the audacity of planning exhibited by the "Mohole Project". (Mohorivicic Discontinuity, or "Moho" for short, + "Hole" = Mohole.)

The project proposes to drill

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a midocean hole some 25,000 feet down through solid rock to reach earth's mantle.

Won't opening such a hole create a volcano or cause earthquakes?

Of course not, the author says, and proves his point. He also elaborates on drilling techniques on land and water and offers such a plethora of fascinating geological information that even a casual reader will soon find himself completely absorbed in an enthralling book.

This is author Bascom's own do-it-yourself, since he is also Director of the Mohole Project. He has managed to pour his own knowledge and enthusiasm in such great measure into his book that it qualifies unqualifiedly as un-down-puttable.

THE BEST FROM FANTASY AND SCIENCE FICTION, TENTH SERIES, edited by Robert P. Mills. Doubleday & Co., Inc.

EDITOR MILLS has turned out a collection from last year's crop of *F&SF* yarns that is as well balanced as a circus aerialist. Almost all of the seventeen items are topnotch, with the following as tip toppers: Robert F. Young's *Nikita Eisenhower Jones,* a starstruck Polynesian; Richard McKenna's *Mine Own Ways,* supercivilization's field anthropologists survive or die in primitive manhood rituals: *The Rainbow Gold,* Jane Rice's superbly comic backwoods pot-o'-gold story and Ward Moore's *The Fellow Who Married the Maxill Girl,* a sensitive account of the plight of a dimwitted (by his race's standards) alien, his green thumb and his exile on Earth.

Rating: *****

THE STAINLESS STEEL RAT by Harry Harrison. Pyramid Books.

HARRISON'S SLICK story, as highly polished as his striking title, envisions a society in which crime literally does not pay. Only the lone-wolf super-criminal can buck the superbly equipped and organized law-enforcement agencies with success. And thereby hangs his tale: set a thief to catch a thief. The top-secret Special Corps does just that, since the devious workings of the criminal mind differ from that of the conscientious cop.

Harrison's clever yarn explores a fascinating facet of the future, crime detection and prevention, and though pure entertainment, underlines SF's role in providing speculative thought about potential problems.

Rating: ****

— FLOYD C. GALE

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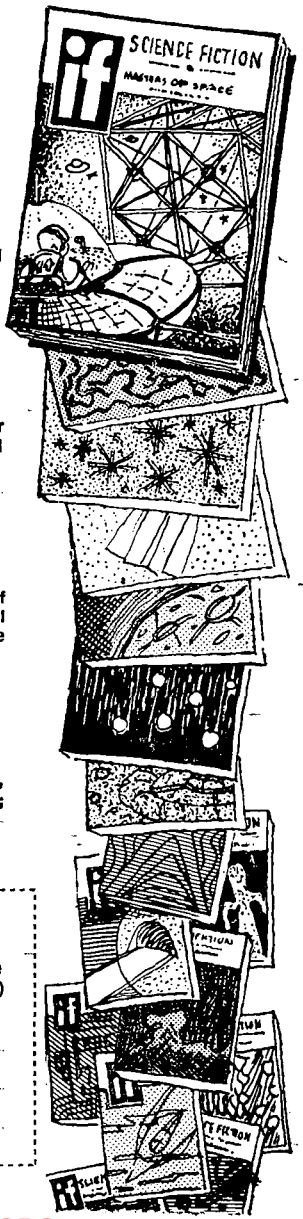

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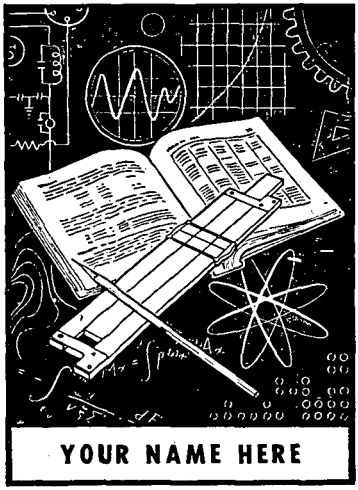

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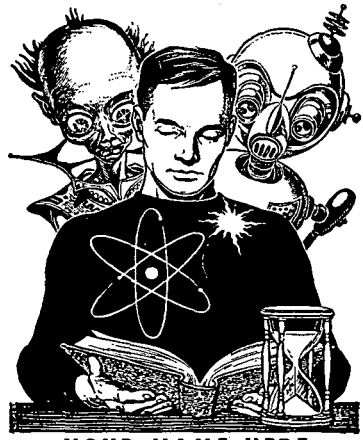

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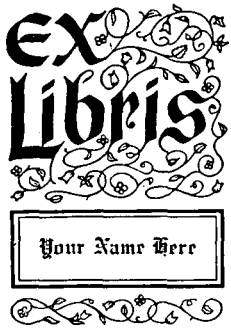

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